Motivations for Mountain Climbing: The Role of Risk

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I hereby declare that this thesis has not been and will not be, submitted in whole or in part to another University for the award of any other degree.

Signature:

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UNIVERSITY OF SUSSEX

DOCTOR OF PHILOSOPHY IN SOCIAL PSYCHOLOGY

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ABSTRACT

Using people actively involved in mountain climbing, this thesis explores people's motivations to participate in mountain climbing, an activity frequently characterised in terms of risk. Moreover, using a variety of both quantitative and qualitative methods the assessment of the role of risk as a motivation for mountain climbing is central to the thesis.

The first study (N = 232) employed a theory of planned behaviour framework that incorporated beliefs about risk, together with other behavioural beliefs, as a means to investigate the motivations of mountain climbers. Although risk emerged as significant positive predictor of attitudes towards mountain climbing, it was the weakest of the four predictor variables.

Study Two (N = 207) presents a psychometric analysis which mapped perceptions of eight types of climbing onto a three component (*Challenge*, *Risk*, and *Enjoyment*) representation of the characteristics associated with mountain climbing. The position of each type of climbing revealed some clear differences between these types in relation to each of the three dimensions. The results presented provide a useful insight into which particular types of climbing should be studied further to build upon the current understanding of the role and importance of risk to participation in mountain climbing.

Study Three (N = 205) used a laddering methodology in order to identify the hierarchical relationship between motives reported by climbers who participate in three types of climbing. Individual cognitive maps were created for each type of mountain climbing. Inspection of both the cognitive maps and indices designed to reflect the importance of individual motives seem to suggest that the importance of risk to people's participation may be less than originally thought.

Study Four (N = 37) was an on-line qualitative study which addressed mountain climbers' views concerning the popular yet controversial opinion that climbers are motivated by risk. Overall, risk appeared to acquire motivational status as a result of its instrumental relationship with other factors explicitly labelled as motivations for mountain climbing.

Together, these findings suggest that, while risk occupies an important position within people's motivations to participate in mountain climbing, it is not risk *per se* that is key to people's participation. Moreover, the results presented hint at risk acting as a facilitator, something necessary to the fulfilment of other important motivations for mountain climbing.

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CHAPTER 1

1.1 Introduction

> *"Climb if you will, but remember that courage and strength are naught without prudence, and that a momentary negligence may destroy the happiness of a lifetime. Do nothing in haste; look well to each step; and from the beginning think what may be the end."* (Whymper, 2002, p.380).

Whymper's cautionary remark in *Scrambles Among the Alps* is frequently cited as a reminder of the inherently risky nature of mountain climbing. Having made a series of unsuccessful attempts, this British alpinist finally reached the summit of the Matterhorn in 1865 (a 'first'), only for four of the seven man team to fall to their deaths during the descent. Given this tragic twist in events after accomplishing so much, it is hardly surprising that he was keen to alert climbers, and would-be climbers alike, to the risk associated with endeavours of this kind.

Today's advances in climbing technology and equipment, together with the varied styles of approach employed to scale routes across the globe, would no doubt stun climbers of the past (see Mitchell, 1983; O'Connell, 1993). Although many have welcomed such developments (for example, higher quality ropes and a whole host of protective devices) and the added security they offer climbers, others have shunned the protection that increasingly sophisticated equipment affords. Indeed, some climbers have chosen to raise the bar, aspiring to a 'purist' approach to ascents, one that is considered ethically incompatible with reliance on protective equipment (see Ebert & Robertson, 2007; Heywood, 1994). Nevertheless, although the face of mountain climbing has changed dramatically over the centuries that have passed since its founding in the 1700s, one truism remains: mountain climbing still involves *risk*.

Though it is difficult to accurately gauge the level of participation in an activity like mountain climbing due to its relatively unregulated nature, available statistics reveal a consistent increase in the number of people visiting crags and mountains over the years. For

instance, the Active People Survey conducted by Sport England highlighted a significant increase in participation over the years with figures having risen from 67,300 in 2005/2006 to 86,200 in 2007/2008 (BMC, 2010). British Mountaineering Council figures also appear to have reflected this trend with participation having nearly tripled over the past ten years, and membership numbers standing at 67,554 at the end of 2008 (BMC Annual Report, 2008). Moreover, it would be fair to suggest that this type of measure only identifies a portion of all active climbers, with many people venturing into the mountains without registering with a mountain climbing organisation of this kind. It is safe to say that what used to be the preserve of a few is now practiced by many (Macfarlane, 2004). Perhaps unsurprisingly, as participation has grown so too have the number of mountain climbing-related injuries and fatalities recorded each year. The Mountain Rescue for England and Wales alone recorded a steady increase from 597 incidents in 2003 rising to 729 in 2006; fatalities peaked in 2005 at 39 only to drop slightly to 32 in 2006 (Mountain Rescue for England and Wales Incident Report, 2006). Figures for Scotland have also indicated a rise in accidents with 387 incidents and 20 fatalities reported in 2008 (Scottish Mountain Rescue Report, 2008).

Over the years, mountain climbing has not only attracted increasing numbers of participants, it has also captured the imagination of a sizeable number of 'armchair enthusiasts', accompanied by the emergence of an abundance of mountain climbing-related books to match (see Lester, 2004). This level of fascination begs the question: what is it exactly about mountain climbing that is so intriguing? Although both researchers and observers have shown an interest in numerous aspects of mountain climbing, which related research and popular literature attest to, arguably what primarily captivates the minds of many is the apparent level of risk climbers are willing to expose themselves to in pursuit of their climbing goals. Essentially, unlike other risk-related behaviours that have received considerable attention, such as monetary gambling and cigarette smoking, the risks associated with mountain climbing are potentially both immediate *and* fatal.

1.2 Risk-related research

Psychological research concerning risk and risk-related behaviours is both diverse and plentiful (e.g., Beck, 1992; Finucane, Alhakami, Slovic, & Johnson, 2000; Kasperson, 1992; Slovic, 2000; Tversky & Kahneman, 1974; Weinstein, 1984; Zuckerman & Kuhlman, 2000). Given the different disciplines that have contributed to this field, from economics to psychology to sociology and more, it is not unexpected that controversy and debate have surrounded even the definition of risk (e.g., Breakwell, 2007; Renn, 1998). With different theoretical perspectives having argued for varied terminologies and definitions, it is wise to clarify what is meant by 'risk'.

1.2.1 Defining risk

The term 'risk' is believed to have originated in the Middle Ages, and was related in maritime insurance to the difficulties one could face at sea (Brievik, 2007; Lupton, 1999). However, conventional contemporary conceptions and usage of the term 'risk' are rooted in early economic theory, where risk is defined in accordance with utility theory, and therefore relates to estimates of the likelihood and magnitude of potential costs and benefits (von Neumann & Morgenstern, 1947). Utility theory presents a prescriptive account of the way in which individuals should make choices among different gambles (Frisch & Clemen, 1994). Specifically, expected utility (EU) is calculated as the value x of each option i multiplied by the probability of its occurrence p: thus, $EU = \sum p_i x_i$. Moreover, utility theory rests on the premise that decisions should be made in such a way as to maximise EU. Importantly, von Neuman and Morgenstern's (1947) original conception of utility theory assumed that the probabilities of uncertain events, outcomes, and consequences were available to the decision-maker. Savage (1954), however, went on to modify utility theory and proposed an alternative, namely subjective expected utility theory (SEU), where the probabilities and values entered into the equation are assessed by the decision maker. Thus, by personalising the model its potential application was extended to situations and choices where probabilities are not provided (von Winterfeldt & Edwards, 1986).

Whereas traditional perspectives of risk grounded in utility theory emphasise estimable probabilities of both costs and benefits, more recent approaches to the study of risk

acknowledge the limitations to this approach and have tended to deal with what is often termed 'uncertainty', the label given to outcomes and events where probabilities are either inestimable or unknown (Cabinet Office, 2002; Lupton, 1999). It is has also been recognised by those in the field of risk that, almost without exception, current social science approaches to risk research almost exclusively focus on perceptions of loss, cost, harm, or other terms used to denote negative consequences (Lupton, 1999), and therefore reflect again a departure from the aforementioned principles of utility theory where both anticipated costs and benefits are considered.

In a similar vein, another issue that has proved central to those concerned with risk analysis relates to the distinction between 'risks' and 'hazards'. Proponents of conventional approaches to risk, concerned with the quantification of risk, have been keen to underscore that references to 'risk' should be understood strictly in terms of either the probability of an adverse consequence occurring, or the magnitude of an adverse consequence, and usually refer to both. 'Hazard', however, is the term given to "anything with the capacity to do harm" (Breakwell, 2007, p. 2). Therefore, although mountain climbing represents a hazard, the risk associated with mountain climbing relates to both the likelihood of an unwanted or harmful consequence occurring, and the consequence itself. Nonetheless, observations of common usage of these terms have revealed that the term 'risk' is often used interchangeably with terms such as 'hazard' and 'danger' (Breakwell, 2007).

Crucially, extensive debates concerning the issues above, although interesting and important, are not the primary focus of the current research. As the present research is broadly focused on the relevance of, and role performed by risk in relation to people's motivations for mountain climbing, and not the precise quantification of risk itself, as conceived in utility theory, it was felt that lay parlance and conceptions of the notion of risk should inform the approach to risk adopted. As such, in this thesis *risk* should be interpreted as one or both of (i) the judgements of uncertainty that people make about any potentially harmful outcomes of their climbing, and (ii) those potentially harmful outcomes.

1.3 Psychological approaches to the study of risk

1.3.1 Utility, rationality, and risk

Early psychological research on risk perception and decision-making under conditions of uncertainty has been heavily characterised by a cognitive approach that sought to judge people's proficiency in appraising different gambles. Research of this kind typically employed utility theories (von Neumann & Morgenstern, 1947; Savage, 1954) as the normative models of choice, and thus provided a benchmark against which individual decisions were assessed (Frisch & Clemen, 1994). Importantly, however, the type of decisions that were originally investigated almost invariably involved monetary gambles. Although experimental decisions of this kind are certainly characterised by an element of risk, in that a potential for some loss or gain is present, the possible negative consequences that could occur are clearly quite different to those potentially arising as a result of, for instance, major surgery, parachute jumping, or mountain climbing (see Breakwell, 2007).

Regardless of the apparently qualitative differences between the type of monetary risks that provided the focus of early research and those risks studied more latterly (e.g., Loomes, 2006), a number of important issues regarding the descriptive validity of utility models, generally, has occupied debates both within and between supporters and critics. Although an extensive account of the axioms concerning *connectivity*, *transitivity*, and *independence* specified by utility theory is beyond the current research interests (for a full review see von Winterfeldt & Edwards, 1986), key to this theoretical position is the notion of 'rationality'. Essentially, as a prescriptive normative model, utility theory rests on the premise that rational individuals will make decisions in accordance with the relevant axioms, and any violation of these rules is said to be reflective of an element of 'irrationality' (Abelson & Levi, 1985).

Although utility theory was initially well received, the seminal work of Tversky and Kahneman (Kahneman & Tversky, 1972, 1973; Tversky & Kahneman, 1971, 1973, 1974), in which they identified a number of heuristics and biases, namely *representativeness*, *availability*, and *anchoring and adjustment* (see Kahneman, Slovic, & Tversky, 1982), marked the beginning of the end of a period where individuals were largely represented as

rational beings, at least in the way described above (Kühberger, 2002). More specifically, it was the discovery that people's decisions consistently deviated from the normative models and the subsequent classification of the aforementioned heuristics and biases (Kahneman, et al., 1982), together with the emergence of additional biases, for example, optimistic bias (Weinstein, 1980), that prompted a new wave of research that presented a view of people that stood in contrast to that of *homo economicus* that had previously predominated (Kühberger, 2002). Although research into heuristics and biases germane to decision-making has bolstered arguments that suggest people behave 'irrationally' when making decisions, frequently failing to make choices that maximise utility, it has also sparked debate on the questionable explanatory power of normative models of this kind. That is, normative models have been criticised on the grounds that they offer little in the way of explanation with respect to the actual *processes* involved in making decisions (Frisch & Clemen, 1994), and therefore questions have been raised concerning the overall suitability of these normative models (Lopes, 1991). Some have gone so far as to suggest that it may be the model that is faulty and not the decision makers (Kühberger, 2002; Oaksford & Chater, 1996).

Importantly, several popular social cognitive models (e.g., theory of reasoned action, Ajzen & Fishbein, 1980; theory of planned behaviour, Ajzen, 1991; health belief model, Janz & Becker, 1984) employed in the field of health psychology are grounded in SEU theory, and therefore imply the same normative principle of maximisation laid down by utility theory (Conner & Norman, 1995):

> "Each of these models emphasizes the rationality of human behaviour...Most assume that behaviour and decisions are based upon elaborate, but subjective, cost-benefit analysis of the likely outcome of differing courses of action." (Conner & Norman, 1995, p. 7).

Again, the notion that people are rational, utility maximising decision-makers, has been called into question by many whom have suggested that individuals making behavioural decisions concerning health behaviours do so

> "without recourse to rational and logical ways of thinking, employing an 'alternative logic' and validity related to their subjective conceptualisation of 'healthy' or 'risky' behaviours." (Crossley, 2001, p. 164; see also Yardley, 1997).

As illustration, Crossley (2001) examined the psychological meaning some gay men attribute to having unsafe sex, and in so doing highlighted the alternative logic employed by these gay men. To be precise, Crossley (2001) described how, regardless of their awareness of the risks associated with having unprotected sex, many gay men viewed these practices as symbolically meaningful indicators of, amongst other things, trust and commitment. Once more, the idea of individuals as rational beings, understood in terms of the notion of rationality stipulated by utility theory where people are hypothesised to make utility maximising decisions, is rejected, with those who have challenged this normative perspective advising a change in direction. More specifically, suggestions have been made that to obtain a more comprehensive understanding of people's perceptions of risks and their corresponding behaviours, it is necessary to consider issues related to meanings, values, and identity, and how such factors relate to the broader social context (Crossley, 2001).

A second line of attack pitched at social cognition models, or more specifically the application of these models, concerns the apparent bias towards a narrow focus on perceptions of health risks in much of the research that has investigated health-related behaviours (McKenna & Horswill, 2006). That is, evaluative judgements of the risks associated with health-related behaviours have tended to predominate with little attention paid to the positive, desirable experiences associated with the same health-related behaviour. It has been felt by some, that not only would a more balanced approach that incorporates judgements of both positively and negatively valenced attributes prove more powerful with respect to the prediction of behaviour, but also aid the development of a more rounded understanding of the subjective meanings attached to such behaviours (e.g., McKenna & Horswill, 2006). Additional comments made by others in the field of health psychology have also highlighted the apparent misconception exhibited in the tendency to label certain behaviours 'healthy' and others 'risky'. Such remarks have stressed that

people who perform certain behaviours commonly referred to as 'risky' may, in fact, not view them in such a detrimental light, perceiving them in terms of a number of other associated attributes (Sparks & Raats, 1998).

This brief consideration of the general trends in research that has specifically adopted a utility theory approach to the study of risk perception presents a mixed picture. Although this normative approach represents the cornerstone to early research on risk, with a great many social psychological models that have followed based on the principle of utility maximisation key to this perspective, this approach has since been the centre of much debate concerning its questionable validity and limited explanatory power with respect to actual decision-making processes (e.g., Frisch & Clemen, 1994). Recently, additional questions have been raised concerning the apparent bias in applications and consequent interpretations of behaviours examined with the aid of SEU theory-based models. Strong arguments for a more balanced approach, one that gives equal consideration to both costs and benefits associated with behaviour have been made (e.g., McKenna & Horswill, 2006). More generally, although convention dictates a position that promotes the utility maximising, health protective individual as 'rational', 'correct' and 'good', and the individual happy to engage in health threatening behaviours as 'irrational', 'wrong', and 'bad', increasingly this stance has been questioned. It has been suggested that this view is not only erroneous but shallow, providing little in the way of explanation as to the subjective meanings people attached to their risk-related behaviour (Crossley, 2001; Lupton, 2002).

Existing research on mountain climbing has eschewed conventional risk perception perspectives, having favoured a more general approach to the exploration of people's perceptions of, and motivations for participating in this activity (e.g., Ewert, 1994; McIntyre, 1991) over one that rests on estimates of both probabilities and utility alone. The present thesis is primarily concerned with the role risk plays in people's motivation for mountain climbing, and therefore is not designed to tackle questions concerning the perception of risk, understood in the strict sense of the term as the subjective quantification

of risk. However, consideration of the traditional approaches outlined above provides important context to the subsequent developments in risk research.

1.3.2 The psychometric paradigm and risk

Another approach to risk perception that has proved particularly popular, resulting in the emergence of an abundance of related research, is the *psychometric paradigm* (see Slovic, 2000). Essentially, the psychometric paradigm and its application is grounded in a factor analytic approach. This approach was originally designed, in this context, to explore the relationships between a set of potentially related characteristics relevant to risk perceptions, for the express purpose of then examining the relationships between any resultant factors and a separate set of research variables, which were traditionally hazards of some kind (Slovic, 2000).

The seminal work of Fischhoff, Slovic, Lichtenstein, Read, and Combs (1978) presented their first application of the psychometric paradigm to the study of various hazards, guided by a desire to identify what factors were responsible for people's varied perceptions of diverse hazards. In this and later research carried out by these colleagues (Fischhoff et al., 1978; Slovic, Fischhoff, & Lichtenstein, 1980), a number of risk characteristics (nine or eighteen) were analysed in relation to large and varied sets of hazards (thirty or ninety). By and large, findings reported for these and similar studies revealed that relationships between the different risk characteristics could be accounted for by either two or three component solutions (Slovic, 1987; 2000). For the majority of the studies the first component was concerned with 'dread' and included characteristics such as *risk severity*, *uncontrollability*, *dreaded*, *catastrophic*, *hard to prevent*, *fatal*, *inequitable*, *threatening future generations*, *not easily reduced*, *increasing*, *involuntary*, and *personal threat*. The second component was labelled 'familiarity' and comprised *observability*, *knowledge to those exposed and science*, *immediacy of consequences*, and *lack of novelty*. The study conducted by Slovic et al. (1980), in which an enlarged set of risk characteristics and hazards were examined resulted in the emergence of an additional third component, namely 'number of people exposed'.

The popularity of the psychometric paradigm arguably rests on its versatility and power as a method, with numerous studies having adopted this approach to the study of multifarious hazards organised in sets of both heterogeneous and homogeneous types of hazards (e.g., Slovic et al., 1980; Sparks & Shepherd, 1994), and for different populations (e.g., Benthin, Slovic, & Severson, 1993), and across a number of countries (e.g., Lai & Tao, 2003); each having presented numerous ratings in relation to each of the hazards examined in easy-to-understand 'cognitive maps'. Moreover, the psychometric paradigm provided a means to investigating risk perception that advanced earlier risk-related work that had sought to gauge people's risk perceptions solely based on the number of fatalities people estimated to be associated with a variety of hazards (e.g., Lichtenstein, Slovic, Fischhoff, Layman, & Combs, 1978). That is, in identifying the characteristic components that discriminate between different hazards, descriptive information beyond that supplied by fatality figures is obtained.

Although a substantial amount of research employing the psychometric paradigm has amassed over the years, it has also been subjected to its fair share of criticism (see Chapter 3 for an extended account), some made by Slovic himself. More specifically, Slovic (1993), although keen to highlight the usefulness of this approach, has also admitted what he perceived to be a serious flaw to the methodology:

> "This broad descriptive capability carries with it, of necessity, a weakness. The analyses lack depth. They provide only surface level description that leaves many questions unanswered" (p. 146).

Slovic (1993) went on to suggest that in order to gain a full and meaningful appreciation of specific hazards, as opposed to summary representations of broad classes of hazards, different methodologies suitable for the in-depth examination should be used.

It is worth making a passing note of mountain climbing's inclusion as one of the many hazards evaluated in the early work of both Fischhoff et al. (1978) and Slovic et al. (1980). However, in line with Slovic's (1993) own critique of the psychometric paradigm, this

approach only provides very general information about a specific sample of people and their perceptions of mountain climbing together with numerous other hazards. Therefore, although results indicated that mountain climbing was positioned relatively low on the 'dread' component and represented a relatively 'familiar' risk, very little else is learnt about mountain climbing specifically, something that a focussed and detailed assessment of this activity would go some way to remedy. Moreover, the information gathered in these studies has only provided quite narrow details concerning the characterisation of mountain climbing in relation to this specific component space, featuring components that emerged from non-climbers' ratings of numerous researcher-selected scales. Clearly, the possibility exists that both the perceptions of actual climbers may differ from those of non-climbers, and that a number of salient characteristics relevant to climbers' perceptions of their activity may have been omitted.

Overall, to date the psychometric paradigm and its applications have provided very limited information about people's perceptions of mountain climbing. Consequently, in order for this methodological perspective to make a meaningful contribution to the current understanding of this activity, and more specifically, climbers' own perceptions of their chosen activity, then data reported by actual climbers in relation to characteristics identified by a representative sample of climbers is required.

1.3.3 Beyond the quantification of risk: a sociocultural perspective

Broadly speaking, sociocultural perspectives on risk represent the antithesis to the cognitive realist approach to risk perception that once dominated risk research. Sociocultural perspectives on risk, although numerous and varied (see Lupton, 1999 for a review), have been unified in their criticism of the cognitive research tradition that places precedence on the quantification of risk, and is primarily concerned with the notion of a rational, utility maximising actor.

Even though different sociocultural perspectives vary in the degree to which they have advocated a position of relativism, central to each is the importance placed on both social and cultural factors in relation to people's perceptions of risk, and the ways in which it is

understood and given meaning, something that is completely overlooked in the cognitivist approach to risk (Breakwell, 2007; Lupton, 1999). Although there is not room here to discuss each of the different sociocultural perspectives that has contributed to the field of risk research, one perspective that has provoked considerable interest since its emergence in 1986 is Beck's notion of the 'risk society' (Beck, 1992).

In *Risk Society: Towards a New Modernity* (1992), Beck was fundamentally concerned with the relationship between modernization and risk. Essentially, Beck (1992) suggested that as Western societies have evolved from pre-modern, to early modern, and then to late modern, so too has its relationship with risk. Beck highlighted the disparity between the nature of the risks society faces today and those encountered in previous times. More specifically, in his description of the 'risk society' Beck was keen to emphasise the severity, scale and incalculability of the risks characteristic of contemporary modern society. According to Beck (1992), industrialisation and the ensuing technological advances have presented society with an array of risks it often feels overwhelmed by, and fundamentally ill equipped to deal with. However, key to the 'risk society' is the notion of human responsibility. Although the risks and hazards that plagued pre-modern times were often considered by such societies as outside their control, determined instead by nature or God, the risks associated with contemporary society are often perceived as directly related to modernisation, and therefore resulting from human thought and action:

> "The 'knowledge society' is also a 'risk society' where we live increasingly in a state of uncertainty. And the risks we face are more and more risks we have created for ourselves" (Bradley & Morss, 2002, p. 513).

Furthermore, central to Beck's (1992) theory of the 'risk society' is the concept of *reflexive modernization*. Reflexive modernization concerns the way in which society deals with the anxieties it has about the risks it faces directly as a result of continued modernisation. It has been suggested that once society comes to recognise that the risks it has created for itself are a direct result of modernisation it becomes reflexive, and is somehow challenged to confront these risks and the accompanying uncertainty, and in turn to question the

structures of society generally. In the 'risk society', scientific knowledge and the views of experts come increasingly under fire with people becoming progressively more sceptical about the technologies they see as fundamentally responsible for the ills of modern day society and, thus, for much of the anxiety and uncertainty they feel. Moreover, the inconsistencies between, contradictions within, and limits to scientific knowledge provided by different sectors and the experts within them become increasingly devalued and distrusted.

Finally, according to Beck (1994), the process of modernization ultimately results in *individualization*: "the disintegration of the certainties of industrial society as well as the compulsion to find and invent new certainties for oneself and others without them" (p. 14). Essentially, in the absence of traditional social structure in the face of continual modernisation and therefore transformation, people increasingly feel the need to be self reliant, looking to themselves for ways in which to cope and progress in an ever changing and unnerving world. Importantly though, the process of individualisation is itself associated with risk: in a society devoid of traditional social structures, individuals become ever more aware both of the need for themselves to take personal control of their lives, and the consequent increase in personal vulnerability that accompanies such independence.

Beck's theory has faced criticism in relation to, amongst other things, both its overconcentration on individualisation and neglect of important issues concerned with communal aspects of risk (e.g., Alexander, 1996; Lash, 1993, 1994). Nevertheless, the notion of the 'risk society' still provides an insightful and important take on the transformations in people's perceptions of risk over the centuries, and the dilemmas and challenges now faced by individual members of contemporary society.

Somewhat at odds with the presentation of a society made up of individuals who are increasingly anxious about numerous risks they feel powerless to deal with, together with observations made by other social commentators on the apparent obsession of industrial society with both public and private safety and security (e.g., Furedi, 1997), is a view of people as risk-seekers, driven to actively engage with risk (see Lupton, 1999, Lyng, 1990).

Alternative perspectives that have addressed issues related to the notion of desired risk, where risk is perceived positively and often framed as satisfying unmet needs, have occasionally been applied in research designed to examine people's participation in mountain climbing (e.g., Lyng, 2005; Stebbins, 2005; Willig, 2008). Appropriately, a presentation of a number of key approaches to the study of mountain climbing now follows, including, amongst others, some theoretical perspectives that present risk as a positive and vital element, fundamental to certain types of experience.

1.4 Mountain climbing-related research

The majority of the limited research pertaining to the psychology of mountain climbing can be organised into two categories, the first related to personality-based research, and the second to research on motivation and meaning. Pivotal to personality orientated research focused on this activity are both the notion of 'thrill seeking' and that of 'sensation seeking'. However, various additional theoretical perspectives that have been examined in relation to people's motivations for, and the meanings people ascribe to mountain climbing, entail risk to varying degrees.

1.4.1 Personality and sensation seeking

Personality approaches to the study of risk behaviour, by definition, emphasise dispositional differences between individuals as central to the elucidation of behaviours characterised by risk. Key to this type of approach is the concept of sensation seeking (Zuckerman, 1979a, 1979b), something that has long been associated with research on volitional risk-taking. Sensation seeking theory and its corresponding measure, the Sensation Seeking Scale V (SSS V; Zuckerman, 1994), was first introduced by Zuckerman. Zuckerman defined sensation seeking as

> "a trait defined by the seeking of varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experience" (1994, p. 27).

The SSS V is comprised of four subscales: *thrill and adventure seeking*, *experience seeking*, *disinhibition*, and *boredom susceptibility* (Zuckerman, 1979a), with those of a sensation seeking disposition hypothesised to score highly on each of these subscales compared to low sensation seeking counterparts.

Sensation seeking has been applied to the investigation of numerous and varied risk-related behaviours (e.g., smoking, risky sexual behaviour, drug use, risky driving, delinquent behaviour, alcohol consumption, and drinking and driving, Greene, Krcmar, Walters, Rubin, Hale, & Hale, 2000; gambling, Gupta, Derevensky, & Ellenbogen, 2006; alcohol consumption, smoking, drug use, risky sexual behaviour, dangerous driving, and gambling, Zuckerman & Kuhlman, 2000), including various forms of mountain climbing (e.g., Cronin, 1991; Jack & Ronan, 1998; Llewellyn & Sanchez, 2008; Llewellyn, Sanchez, Asghar, & Jones, 2008; Slanger & Rudestam, 1997).

Typically, research focused on the relevance of sensation seeking to participation in mountain climbing has compared Sensation Seeking Scale V (SSS V, Zuckerman, 1979a) scores obtained from samples of mountain climbers to those reported by control groups. In so doing, research of this kind has sought to confirm the frequently cited hypothesis that participants who engage in mountain climbing tend to report higher scores on measures of sensation seeking compared to controls (e.g., Cronin, 1991; Gomà-i-Freixanet, 1991). Cronin (1991), for example, compared the SSS V (Zuckerman, 1979a) scores of twenty members of a university climbing club to those of twenty-one control volunteers. Results revealed significant differences between the two groups with the climbing group reporting higher scores on both overall sensation seeking and two of the subscales: the thrill and adventure seeking scale and experience seeking scale. Although the climbers obtained higher scores on the two remaining subscales (i.e., the disinhibition scale and the boredom susceptibility scale), the differences were not statistically significant. However, that the group of climbers scored higher on the thrill and adventure seeking subscale is not surprising given that this subscale includes items specifically related to mountain climbing and similar activities. Nevertheless, these findings appear to provide some support for the

discriminatory power of the SSS V and indicate the potential utility of the scale as a tool for the identification of people attracted to activities characterised by high risk.

Subsequent studies have mirrored the findings described above (e.g., Breivik, 1996; Rossi & Cereatti, 1993), therefore providing more evidence to support the notion that mountain climbers are characterised by high levels of sensation seeking. For instance, Breivik (1996) assessed the SSS V (Zuckerman, 1979a) scores of four groups: Norwegian expedition climbers, Norwegian elite climbers, undergraduate sports students, and military recruits. As hypothesised, the expedition climbers reported higher levels of overall sensation seeking compared to the other three groups. Moreover, the expedition climbers were characterised by notably higher scores than the other groups on the boredom susceptibility subscale, thus hinting at a greater need for stimulation. Furthermore, a study conducted by Rossi and Cereatti (1993) yielded comparable results that found mountain climbers and those engaged in mountain-related sports reported higher scores on the SSS V compared to both a control group and other participants engaged in lower risk sports.

Although research of this kind (e.g., Breivik, 1996; Cronin, 1991; Rossi & Cereatti, 1993) appears to have consistently substantiated the relevance of sensation seeking to participation in mountain climbing, the validity of the findings have been called into question based on the aforementioned issue concerning the potentially biasing influence of items featured on the thrill and adventure seeking subscale. Essentially, it has been argued that because many of the items included on this subscale specifically relate to high risk activities comparable or identical to those being studied, including mountain climbing, perhaps the differences between sensation seeking scores reported by control groups and groups of mountain climbers is largely due to variance in this subscale alone (Gomà-i-Freixanet, 1991; Jack & Ronan, 1998).

In response to this criticism, some research has chosen to incorporate a new measure of sensations seeking that includes three of the original four subscales that make up the SSS V (Zuckerman, 1979a) but specifically excludes the thrill and adventure seeking subscale (see, for example, Gomà-i-Freixanet, 1991). Gomà-i-Freixanet (1991), for example,

assessed the SSS V scores of four different groups: alpinists who had been on expeditions to peaks higher than 8000m in altitude, mountaineering-related sportsmen who comprised climbers and skiers, sportsmen engaged in a variety of alternative non-mountaineering-related high risk sports, and a control group. Importantly, however, measures both of total sensation seeking and sensation seeking without the thrill and adventure seeking dimension were assessed. Moreover, by dividing the sample as outlined above it was possible not only to examine any differences between participants involved in mountain climbing and those in the control group, but also to expand upon previous findings and include comparisons between those engaged in different types of mountaineering-related sports. Further still, contrasts between those engaged in different types of mountaineering-related sports and those engaged in alternative non-mountaineering high risk sports were included. Overall, the results revealed that the three high risk sports groups differed significantly from the control group on overall sensation seeking and the new sensation seeking minus thrill and adventure seeking measure, both in the expected direction. However, even though the alpinist group were expected to report higher sensation seeking scores due to the increased risks associated with this particular activity, when compared to the other mountaineering-related sports group and the non-mountaineering-related high risk sports group, no such differences were observed. In contrast, the mountaineering-related sports group did report significantly higher scores on both the thrill and adventure seeking subscale and experience seeking subscale, together with overall sensation seeking, when compared to the non-mountaineering-related high risk sports group. Taken together these results bolster previous suggestions that people who participate in high risk sports, including mountain climbing, tend to have a personality profile characterised in part by high sensation seeking. Furthermore, the results appeared to suggest that people engaged in mountaineering-related high risk sports may exhibit higher levels of sensation seeking than those participating in other non-mountaineering-related high risk sports. Yet, it is worth noting once more the potential influence of the items featured on the thrill and adventure seeking subscale. Specifically, the possibility exists that the significant differences between the mountaineering-related sports group and the non-mountaineering sports group on both the thrill and adventure seeking subscale and in turn the overall SSS V could possibly be due to the nature of the items featured on this subscale alone. In addition to this, given that the

samples recruited by Gomà-i-Freixanet (1991) only included men, the scope to apply these findings to mixed sex high risk sports populations is restricted.

Later work by Jack and Ronan (1998) confirmed once more the relationship between high risk sports, including mountaineering, and high levels of sensation seeking. That is, by comparing the scores of those engaged in four low risk sports (swimmers, marathon runners, aerobics, golfers) to those engaged in four high risk sports (hang gliders, mountaineers, sky-divers, automobile racers) on both the overall SSS V, the four individual subscales, and the reformulated sensation seeking minus thrill and adventure seeking scale, it was possible to corroborate previous related findings (e.g., Gomà-i-Freixanet, 1991). Moreover, further comparisons revealed that, second to sky-divers, mountaineers scored highest on the SSS V of the sports studied. Despite the added support that these findings provide for the argument that those who participate in mountain climbing are characteristically high sensation seekers, the authors themselves have flagged up a couple of issues regarding this study. First and foremost, the generalisability of the findings presented was restricted on two counts: the particularly small size of particular subsamples, and the limited number of high risk sports featured in the study. Together, these issues with sampling restrict the conclusion that can be drawn from this particular study. What is more, the authors highlighted a concern raised by some of the participants concerning the 'forced choice' style of the SSS V (Zuckerman, 1979a). Essentially, feedback from several participants suggested that the SSS V items were presented in a format incompatible with many of their thoughts and feelings (Jack & Ronan, 1998), thus rendering the validity of their responses questionable. Nevertheless, the use of the classic SSS V (Zuckerman, 1979a) was defended by Jack and Ronan (1998) based upon the popularity and common usage of the scale in related and therefore comparable studies.

Some have questioned the ability of sensation seeking theory alone to provide a truly informative account of participation in high risk sporting activities (e.g., Slanger & Rudestam, 1997). In fact, relevant statistics have revealed that only a mere ten percent of the variance in behaviour can be attributed to differences in sensation seeking scores (Furnham, 2004). Clearly, additional factors outside of sensation seeking also contribute to

people's participation in mountain climbing. Perhaps even more crucially, however, is the questionable relevance of risk *per se* to sensation seeking. It has been suggested that it is easy to misinterpret the relationship between sensation seeking and risk, and as such make predominately false assumptions about sensation seekers' motivations to pursue higher levels of risk (Krein, 2007). More specifically, research has revealed that those who score highly on the SSS V, although participating in higher risk activities, do not actively seek to increase the level of risk encountered as part of those activities. For instance, people who break the speed limits do so when wearing a seatbelt. Therefore, it has been argued that risk does not represent the express purpose of activities pursued by sensation seekers; rather, risk is accepted as a means to alternative valued elements of the same activity (Krein, 2007).

Attention will now turn to research concerned with alternative theoretical perspectives which add to the understanding of participation in risk-related activities provided by sensation seeking theory. Slanger and Rudestam (1997) drew upon self-efficacy theory to expand upon existing sensation seeking-related explanations for people's risk taking behaviour, and more specifically, people's volitional risk taking in certain behavioural domains and not others. Self-efficacy refers to an individual's "belief in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p.3). Slanger and Rudestam (1997) proposed that extreme physical risk takers would report higher levels of sensation seeking, physical self-efficacy and general self-efficacy. They based these hypotheses on the notion that those individuals characterised by high levels of sensation seeking, and therefore low levels of arousal, would experience states of optimal functioning in situations of high risk due to the raised levels of stimulation, something diametrically opposed to the experiences of low sensation seekers in the same situations. Further, Slanger and Rudestam (1997) argued that greater exposure to more stimulating situations, and the accompanying experiences of successful physical performance, would only serve to enhance high sensation seekers' perceptions of self-efficacy. In turn, such elevated senses of self-efficacy were proposed to fuel further motivation to participate in future stimulating, high risk activities, therefore perpetuating the cycle.

As the primary objective of Slanger and Rudestam's (1997) study was to examine the relationship between level of risk taking and sensations seeking and self-efficacy, participants were categorised into three risk level groups: extreme risk, high risk, and a low risk control group. The participants in both the extreme and high risk level groups comprised five active participants from each of the following sports: rock climbing, kayaking, skiing, and piloting a small plane. Participants were assigned to either the extreme risk group or high risk group according to established grading and classification systems for each of the sports. That is, those participants that participated at the highest level in their chosen sport were assigned to the extreme risk group, and those that participated at the level just below the extreme level were assigned to the high risk group. The third group, the low risk control group, comprised twenty sportsmen engaged in low risk sports. All participants were matched for skill level and age. Somewhat unexpectedly, results revealed no significant differences between different risk groups on overall SSS V scores. In fact, physical self-efficacy was the only variable that successfully differentiated between each of the risk level groups. That is, the extreme risk group scored significantly higher on the physical self-efficacy measure compared to the high risk group. In turn, the combined extreme and high risk groups scored significantly higher on the physical self-efficacy measure when compared to the low risk group. No significant differences between risk groups were observed in relation to the measure of general self-efficacy. Taken together, these findings led the authors to conclude that the disinhibition associated with extreme risk taking is largely related to perceptions of self-efficacy as opposed to raised levels of sensation seeking (Slanger & Rudestam, 1997). Moreover, this particular study bolstered previous suggestions made by Bandura (1977) that self-efficacy is context specific. This proposition largely explains why mountain climbers may be happy to accept the risks associated with climbing due to their raised levels of confidence associated with this particular activity, but not necessarily exhibit high levels of general self-efficacy and therefore refrain from taking risks in other areas of their lives.

The research conducted by Slanger and Rudestam (1997) deserves praise for its design, and consequent capacity to rigorously assess the relationship between different levels of risk taking and both self-efficacy and sensation seeking, even when skill level was controlled

for. Moreover, the research contributed to the current understanding of risk taking as it included 'extreme' risk takers, a population not often studied, together with high and low risk taking groups (Slanger & Rudestam, 1997). Furthermore, the application of self-efficacy theory to risk research of this kind marked a novel approach to this field, and appeared to yield some useful preliminary findings. Nevertheless, problems related to the suitability of the SSS V as an informative measure in research into this particular activity remain. Also, at a very basic level, the small sample size (N = 40) may have also reduced the likelihood of identifying any differences between different risk level groups (Llewellyn & Sanchez, 2008).

Following on from the work of Slanger and Rudestam (1997), Llewellyn and Sanchez (2008) decided to examine not only sensation seeking in rock climbers, but also self-efficacy together with impulsivity. In response to suggestions that research that has examined sensation seeking in high risk sports populations using the SSS V (Zuckerman, 1979a) is largely tautological due to the items featured in the scale, Llewellyn and Sanchez (2008) decided to employ the more recently devised Impulsivity-Sensation Seeking Scale (Imp-SSS, Zuckerman, 1994). Zuckerman (1994) defined impulsivity as

> "the tendency to enter into situations, or rapidly respond to cues for potential reward, without much planning and deliberation and without consideration of potential punishment or loss of reward" (Zuckerman & Kuhlman, 2000, p.1000).

Unlike the SSS V, the Imp-SSS is made up of items devoid of reference to specific behaviours, therefore making it more suitable to the appraisal of sensation seeking in high risk sports groups such as mountain climbers. Llewellyn and Sanchez (2008) tested a number of hypotheses including: that sensation seeking would be positively associated with risk taking in rock climbing, that risk taking would be higher in impulsive rock climbers, and that risk taking would positively associated with self-efficacy. The climbers' risk taking was evaluated using four measures: soloing frequency and difficulty ('soloing' refers to climbing without the use of protective equipment or assistance of a partner), and leading frequency and difficulty ('leading' refers to climbing where the climber places the

protection themselves as they negotiate and ascend a climb). Overall, the results indicated that self-efficacy was significantly positively related to risk taking in rock climbing. Conversely, both impulsivity and sensation seeking failed to significantly account for variance in risk taking in rock climbing, and small differences that were observed were in the unexpected direction. That is, those participants who reported higher levels of sensation seeking and impulsivity scored lower on the measures of risk, albeit non-significantly. Accordingly, these findings substantiated those previously reported by Slanger and Rudestam (1997) that suggested those climbers who hold higher perceptions of confidence and competence tend to take higher risks. Together, results of this kind support conclusions that climbers high in self-efficacy relish opportunities to engage in climbing situations in which they feel challenged, and therefore make use of relevant skills which in turn foster a sense of mastery and enhance feelings of competence and control. Although this study deserves credit for its considered use of the Imp-SSS over the SSS V, again the imbalance in men and women in the sample limits the generalisability of the findings.

Llewellyn, Sanchez, Asghar and Jones (2008) went on to test the relationship between self-efficacy and risk taking in rock climbing for a sample of both indoor and outdoor climbers. Importantly, given Bandura's (1977) comments concerning the context specificity of self-efficacy, Llewellyn et al. (2008) decided to construct and incorporate a Climbing Self-Efficacy Scale (CSES, see Llewellyn, et al., 2008 for a full description of the scale's construction and validation). Next, a battery of rock climbing behaviours were measured including frequency of participation in key types of rock climbing, the difficulty level of climbs performed, and years experience in rock climbing. In general, the results revealed a significant positive relationship between CSES scores and frequency and difficulty of high and medium risk climbing behaviours both for indoor and outdoor climbers. These findings clearly substantiated and added to previous research (e.g., Llewellyn & Sanchez, 2008; Slanger & Rudestam, 1997) that has focused on the relationship between self-efficacy and risk taking in climbing having incorporated indoor as well as outdoor climbers. Moreover, the innovative construction and implementation of the CSES arguably enhanced the validity of these findings.

On balance, an individual differences approach to the study of mountain climbing has yielded some informative findings concerning the particular relevance of measures of both sensation seeking and self-efficacy to this risk-related activity. Perhaps most striking though are comments made regarding the apparent inappropriateness of longstanding assumptions that suggest mountain climbers represent a homogenous group, characteristically high in sensation seeking (e.g., Llewellyn & Sanchez, 2008). The related literature reviewed above provides good grounds to argue that the acquisition of a full and accurate understanding of the motivations driving participation in mountain climbing, and so a more rounded insight into those engaged in this activity, largely depends upon more than the assessment of various personality-related measures including, for example, sensation seeking.

1.4.2 Motivations and meanings

A variety of both psychological and sociological perspectives have informed and been discussed in relation to research into motivations for mountain climbing. More specifically, two perspectives that have proved particularly enlightening with respect to people's motivations for, and the meanings they attribute to their experiences of mountain climbing are: *edgework* (Lyng, 1990), and *flow experiences* (Csikszentmihalyi, 1975). A descriptive account of each of these perspectives now follows.

1.4.2.1 Edgework

Lyng's (1990, 2005) theory of edgework assumes an important position within research specifically designed to examine volitional risk-taking. Importantly, in Lyng's (1990) seminal paper a theoretical account of voluntary risk-taking, in the form of sky-diving, is presented that addresses both the experiences of individuals, and how such experiences relate to society in general, thus making explicit the link between the social and psychological dimensions of edgework. In Lyng's (1990) own words, edgework "ties together such factors as political economic variables, at one end of the continuum, and individual sensations and feelings, at the other end" (p. 851). At the heart of the theory of edgework is the challenge of negotiating boundaries, specifically boundaries between chaos and order, harm and safety, or ultimately, life and death (Lyng, 1990).

The concept of edgework (1990) includes three dimensions: edgework activities, edgework skills, and edgework sensations. Paramount to the definition of edgework activities is a sense of harm, with activities characterised as edgework required to "involve a clearly observable threat to one's physical or mental well-being or one's sense of an ordered existence" (p. 857). In the most extreme cases edgework activities involve the challenge of successfully operating at the boundary between life and death.

An additional feature shared by all edgework activities concerns the development and successful execution of highly specific skills, skills that are deemed necessary to the effective performance of individual edgework activities. While the term skill, as it is employed in edgework theory, relates to individuals' proficiency in a certain domain, and as such is activity specific, within this theory the notion of skill also applies to a more general sense of aptitude. Specifically, Lyng (1990) was keen to highlight a unique skill required in all edgework activities: the ability to remain in control of situations where, by definition, the edgeworker is operating at their threshold, with disorder, chaos, and personal disaster only a knife's edge away. For Lyng (1990), the ability to control intense experiences of fear and maintain sharp focus in situations of this kind represents a certain type of "mental toughness" (p. 859). It is this survival-like quality that makes edgework activities distinguishable from the numerous highly skilled activities pursued by many, in everyday life.

The final dimension relates to the sensations typical of edgework activities. While this theoretical perspective acknowledges a degree of variation in the sensations experienced by participants in varied edgework activities, a number of key sensations common to each are identified. Principal to all types of edgework is a sense of 'self-realization', 'self-actualization', or 'self-determination': "In the pure form of edgework, individuals experience themselves as instinctively acting entities, which leaves them with a purified and magnified sense of self" (Lyng, 1990, p. 860). Additional sensations frequently reported include: (i) experiences of exhilaration once initial feelings of fear have been contained and overcome, (ii) changes in perception, with participants often referring to a state of extreme focus with only the factors key to the successful management of the edge

receiving attention, participants oblivious to all peripheral stimuli, (iii) additional changes in perception, with participants frequently reporting alterations in their experience of time, sometimes feeling as if time has gone very quickly, and on other occasions as if time has passed slower than usual, (iv) feelings of unity and "oneness" with their activities and the environment in which their activities take place, (v) a sense of "hyperreality", that is, a feeling that the experiences had whilst performing edgework activities are more real than everyday, routine experiences, and lastly, (vi) a sense of ineffability, with edgework experiences frequently referred to as almost impossible to put into words.

In a bid to provide a theoretical perspective on voluntary risk taking that incorporates both macro-level societal influences and micro-level individual experiences, Lyng's (1990) original essay on edgework presented an analysis of edgework informed by the work of both Karl Marx and George Herbert Mead, and centred around the apparent difference between the *constraint* experienced within institutional life and the *spontaneity* sought in personal life. Moreover, Lyng (1990) not only supported suggestions that the spontaneity - constraint polarity is central to many difficulties people encounter in contemporary society, but proposed also that it provides an invaluable framework for the elucidation of edgework. Essentially, he suggested that in contemporary, post-industrialised society where "the predominant sensation for the individual is one of being pushed through daily life by unidentifiable forces that rob one of true individual choice" (Lyng, 1990, p. 870), edgework represents an antidote to this situation, providing individuals with a means to the pursuit of spontaneous, creative, and self-directed action. Lyng went on to present an extended account and interpretation of each of the dimensions characteristic of edgework in relation to the proposed spontaneity – constraint polarity (see Lyng, 1990, pp. 871-882). Significantly, Lyng was keen to highlight a central feature of the relationship between spontaneity and constraint, specifically the dependency hypothesized between these states, with unrestrained, free action only possible in reaction to a state of constraint.

Although edgework has provided the theoretical basis to a number of studies related to varied risk-related activities (e.g., drug use and crime [Collison, 1996], skydiving [Lyng, 1990], and search and rescue work [Lois, 2001]), no studies on mountain climbing have

employed this perspective expressly as the basis to their research. In spite of this, a few mountain climbing-related studies have drawn parallels between Lyng's (1990) concept of edgework and particular findings observed (e.g., Kiewa, 2001). For instance, Kiewa (2001) conducted an interview study that sought to investigate the meanings and values attributed to personal control within the context of rock climbing, and in what ways perceptions of control contributed to a narrative of self-determinism. Using the diary entries of a sample of Australian climbers (N = 29) over a period of six months, a semi-structured in-depth interview protocol was constructed. Fourteen (seven men and seven women) of the original sample were interviewed. All of the participants were 'traditional' climbers. Traditional climbing advocates a principle of 'free' climbing where climbers are expected to place their own protective devices as they climb, and for this reason the use of preplaced protection to assist the completion of a route is prohibited. Kiewa (2001) justified the focus on traditional climbers on the grounds that this type of climbing accepts the limits to climbers' control over the environment and therefore shifts the focus onto perception of control specific to the climbers themselves (Heywood, 1994). Analysis of the interview transcripts identified two control-related themes: the need for self-control in stressful situations and the desire to retain the activity of climbing as a space over which one has control. The former theme related to the aforementioned notion that climbers have to accept the lack of control they have over the environment in which they climb, and therefore look to themselves to control the potentially dangerous situations in which they find themselves. Moreover, Kiewa (2001) drew parallels between participants' accounts of the satisfaction and elation experienced having maintained control under conditions of high risk and Lyng's (1990) account of the experiences and motivations that drive those who engage in edgework. That is, individuals who engage in edgework activities are characterised as individuals who actively seek out situations that necessitate the competent application of relevant skills, thus resulting in feelings of mastery and control (Lyng, 1990). The second theme concerned the importance to climbers of the retention of climbing as a domain in which they had the opportunity to feel in control, something that stood in contrast to the feelings they had in relation to other areas of their lives, such as work and relationships. This finding also resonated with suggestions made by Lyng (1990) that people engaged in edgework activities often view their chosen activity as an area in which they are free from the

pressures and lack of autonomy experienced in work and everyday life. Even though Kiewa's (2001) research provided an informative insight into the meanings attached to, and experiences of control encountered by a particular sample of climbers, further research is required to establish the relative importance of feelings of control compared to other motivating factors, and the relationship between control and alternative motivations reported for mountain climbing.

Additional mountain climbing-related research specifically concerned with motivations for participation has also obtained findings that resonate with the work of Lyng (1990). For instance, McIntyre (1991) asked a sample of climbers (N =148) to evaluate a number of motivations for climbing. The study also sought to identify any differences in the importance placed on the different motivations by climbers of different levels of involvement. Preliminary analysis identified six motivation components: Recognition, Problem solving, Physical setting, Competence, Escape, and Leadership. Notable was the similarity between the items that loaded onto the Competence component and features of edgework. In particular, the items 'experience excitement', 'develop skills and abilities', and 'test myself', all have much in common with the parameters set out by Lyng (1990) regarding both edgework skills and edgework sensations. Moreover, McIntyre (1990) remarked on the significantly greater importance highly involved climbers placed on three of the motivation components (Problem solving, Competence and Relaxation) compared to the less involved climbers. The finding that highly involved climbers placed more importance on Competence as a motivation is also arguably consistent with suggestions made by Lyng (1990) that those more heavily engaged in their chosen edgework activities exhibit high levels of drive to challenge themselves further and master more refined relevant skills.

Likewise, Ewert (1994) conducted a study (N = 360) that examined the relationship between experience level and the importance placed on a variety of motivations reported for high altitude mountain climbing. Particular attention was paid to the importance of risk as a motivation. Following the completion of a high altitude expedition, participants were asked to complete a questionnaire designed to evaluate a broad range of motivations for

participation in high altitude climbing. Results revealed a five factor structure for motivations: Exhilaration/excitement, Social aspects, Image, Aspects of climbing, and Catharsis/escape. Of potential interest here are remarks made by Ewert (1994) that concerned the similarity between some of the motivation components identified and elements of edgework. To illustrate, items that loaded onto the Aspects of climbing component included 'develop climbing skills', 'gain control over self', and 'personal testing', all motivations that share common ground with a number of edgework's defining features, namely, mastery of relevant skills, pushing oneself, and achieving control over one's activity (Lyng, 1990). No significant differences in the importance placed on the motivation item 'risk' were observed between the different experience level groups. However, it is important to note a potential limitation to the study with respect to the evaluation of the motivational import associated with risk in particular. More specifically, the questionnaire data were collected at the end of the climbing expedition and therefore it could be argued that the salience of risk was diminished given the potential for harm or failure was over. Beyond this, the study provides some useful information about the varied significance attributed to different motivations for climbers with different levels of experience.

In spite of the absence of mountain climbing-related research that has directly explored the notion of edgework, the selected research findings outlined above clearly indicate a degree of crossover between a number of observations that have been made about the motivational basis to mountain climbing and aspects of the theoretical perspective of edgework. On these grounds alone, it could be argued that the edgework perspective provides an appropriate and potentially fruitful direction for future research concerned with motivations for this particular activity. Nonetheless, due to the sociological roots of edgework and the attendant lack of quantifiable measures, the scope for analysis is restricted. That is, in order to conduct a truly rigorous analysis of the motivations that drive mountain climbers, research that incorporates features of the edgework perspective together with those of other theoretical perspectives as part of a mixed methods approach almost certainly represents the best way forward.

1.4.2.2 Flow

Csikszentmihalyi's (1975) theory of 'flow' provides an interesting and useful perspective on the motivational basis to challenging behaviour that seemingly provides little in the way of external rewards. Flow is inextricably linked to the notion of *autotelic experience*, that is, experience that is rewarding in and of itself (Csikszentmihalyi, 1988). Moreover, the theory of flow is grounded in a symbiotic relationship between *challenge* and *skill*. Fundamentally, for a state of flow to be achieved, the individual performing the activity must perceive it both as challenging and that they have the necessary skills to meet the challenge successfully (Csikszentmihalyi, 1988). Although in theory any activity can potentially become a flow activity, Csikszentmihalyi (1988) suggested that flow was more likely to occur in heavily structured activities where the balance between challenge and skill can be actively altered so as to achieve the appropriate level of demand necessary for the occurrence of flow experiences. Moreover, he suggested that achieving this sort of balance is not always possible in everyday life due the disequilibrium between demands and resources commonly experienced (Csikszentmihalyi, 1988). Nevertheless, although the theory was not specifically designed with risk-related activities in mind, due to the overtly challenging nature of some risk-related activities, it has provided a fruitful perspective from which to analyse voluntary activities characterised by an element of risk (see Csikszentmihalyi, 2000).

A number of dimensions characteristic of flow experiences were outlined by Csikszentmihalyi: the merging of action and awareness, clear goals and feedback, concentration on the task in hand, paradox of control, loss of self-consciousness, and transformation of time (Csikszentmihalyi, 1992). Taking each dimension in turn, the merging of action and awareness relates to the total immersion in the activity a person experiences when in a state of flow. More specifically, it is hypothesised that all of the individual's skills are drawn on to successful carrying out the activity, so much so that there is no reserve in attention for stimuli peripheral to the task in hand, and the individual is involved in their activity to the point that it becomes almost automatic, they perceive themselves as unified with their action, and any sense of a reflective separate self is absent from moments of pure flow (Csikszentmihalyi, 2000).

Next, all flow activities are defined by clear goals and provide clear feedback. That is, a person participating in a flow activity knows what it is that they want to do, and, possessing the relevant skills, they know how to do it. Similarly, the feedback provided by such actions is readily interpreted as either 'good' or 'bad'. That is, even though the feedback may assume various forms it fundamentally informs the participants as to whether they have successfully accomplished their goal or not (Csikszentmihalyi, 1992).

An important and often documented dimension of flow concerns concentration on the task in hand to the exclusion of all other information irrelevant to the accomplishment of the goals specific to the flow activity. Explicitly, people engaged in flow activities who are actually in a state of flow, often report a highly narrowed field of perception with concerns related to aspects of everyday life 'removed from view'. Csikszentmihalyi (1992) referred to a comment made by a mountaineer as an illustration of this specific characteristic of flow:

> "When you [climb] you're not aware of other problematic life situations. It becomes a world unto its own, significant only to itself. It's a concentration thing. Once you're into the situation, it's incredibly real, and you're very much in charge of it. It becomes your total world" (p. 59).

Another dimension common to flow experiences is the sense of control felt by individuals participating in flow activities. This is of particular relevance to the current thesis, as a sense of control is frequently reported by those participating in flow activities that are inherently risky (Csikszentmihalyi, 1992). Importantly, Csikszentmihalyi (1992) drew a distinction between *being* in control and *exercising* control in difficult situations. He suggested that it is the feeling of being able to exercise control over a situation by employing the relevant skills at their disposal that the participant in flow activities relishes. Moreover, he remarked on the awareness of many participants that some risks are 'objective', and as such beyond their complete control, seen by these participants as something to avoid although acknowledged as impossible to remove. However, he also noted an 'illusion' of control exhibited by some people in situations characterised by

uncontrollable, chance-related risks. For instance, those who participate in gambling activities often report a feeling of being in control of a situation that is ultimately determined by the roll of a dice.

Loss of self-consciousness represents an interesting element characteristic of flow experiences. Different terms are used to refer to this loss of self-consciousness including, for example, 'loss of ego', 'self-forgetfulness', and 'transcendence of individuality' (see Maslow, 1971). This loss of self-consciousness does not, however, refer to a forgetting of the physical self, rather it relates to a lack of 'self-monitoring' (see Snyder, 1987) and therefore to the absence of the 'social' self, the 'ego' (see Freud, 1927), the self that is concerned with what others think, and with behaving in socially appropriate ways. One mountain climber commented:

> "The task at hand is so demanding and rich in its complexity and pull that the conscious subject is really diminished in intensity. Corollary of that is that all the hangups that people have or that I have as an individual person are momentarily obliterated…It's one of the few ways I have found to…live outside my head" (Csikszentmihalyi, 2000, p. 43).

Lastly, the dimension concerning transformation of time parallels a feature of edgework (Lyng, 1990). As with edgework, when in a state of flow time can pass very quickly with hours feeling like minutes, and on other occasions time is elongated with brief moments experienced as lengthy (Csikszentmihalyi, 1992).

The theory of flow has been explored specifically in relation to mountain climbing by Csikszenmihayli (2000) himself. Csikszentmihalyi (2000) considered mountain climbing as a prime example of activity where individuals could experience flow. Specifically, he highlighted the challenging and skilled nature of this activity, emphasising also the potential for progression with increasingly challenging experiences available in the form of more demanding climbs, and the scope for skill development as a means to match such evolving challenges. Csikszentmihalyi (2000) conducted interviews with thirty active

climbers during which the climbers were encouraged to talk freely about their involvement in this activity. Moreover, the interviewees were encouraged to talk about whatever aspects of their climbing they desired, the interview process largely directed by the climbers themselves. Csikszentmihalyi's (2000) research findings suggested that although not all the climbers interviewed reported experiences of flow, almost a third did. According to the theory of flow, it is the experience of flow itself that reinforces participation in flow activities. Therefore, the argument follows that mountain climbers continue to climb as a means to repeated experience of positively valued states of flow.

Delle Fave, Bassi, and Massimini (2003), also examined the notion of flow within the context of mountain climbing. Specifically, Delle Fave et al. (2003) used experience sampling methodology and assessed a sample of high altitude climbers' self-reports on a number of measures including the types of activities performed during the expedition, perceptions of the quality of the experience associated with different activities, engagement, mood, intrinsic motivation and risk assessment. This study had two main objectives: to test the hypothesis that the principal reason for participating in the risk-related expedition was to experience states of flow (Csikszentmihalyi, 2000), and to investigate the relationship between subjective assessments of risk and evaluations of the overall quality of the experiences associated with expedition activities. Results supported the main hypothesis that flow states were more frequently associated with the expedition than were other experiential states such as, anxiety, apathy and relaxation (Delle Fave et al., 2003). Moreover, results revealed that flow was most strongly associated with participation in both camp and climbing activities than with leisure and maintenance activities. Further consideration of the results suggested that the climbers were highly intrinsically motivated to participate in climbing and camp activities due to the meaningful challenges these activities provided that necessitated the use of relevant skills and resulted in feelings of competence and experiences of flow. Of particular interest were findings that climbers' perceptions of risk contributed little to their climbing experiences. As a result, Delle Fave et al. (2003) emphasised the need to distinguish between risk seeking and activities that provide challenge. Delle Fave et al. (2003) concluded that experienced climbers are highly motivated to engage in activities that present a balance between their advanced skills set

and the challenges faced, and not activities characterised by high risk *per se*. This study is, as far as the author is aware, unique in its application of experience sampling methodology to the exploration of mountain climbing. Accordingly, the research represented a novel approach that effectively dealt with issues that have been expressed in relation to the collection of motivational data after the completion of expeditions once the salience of any threat of danger has passed (e.g., Ewert, 1994). Nevertheless, this method has its own problems, namely, its reliance on self-report data. Specifically, experience sampling methodology relies on participants responding at given times, something not always possible in a mountain environment due to the unpredictability of conditions. Moreover, the demands of this method have the potential to interfere with mountain climbers' experiences, thus potentially adversely influencing the climbing experience itself.

Additional research that has focused on the motivational basis to mountain climbing has made similar references to the notion of flow (Csikszentmihalyi, 2000), often drawing parallels between their research findings and this theoretical perspective (e.g., Mitchell, 1983; Pomfret, 2006; Stebbins, 2005; Willig, 2008). For instance, Pomfret (2006) reviewed a broad array of mountain climbing-related research and then created a conceptual framework designed to provide a representation of the motivations that drive participation in mountain climbing, a characterisation of the experiences had by mountaineers, and the characteristics that define mountaineers themselves. A great many factors were identified, for example, sensation seeking, self-determinism, the mountain environment, and escapism. Moreover, factors highly similar to those featured in flow theory included challenge, mastery, concentration, fulfilment and deep involvement (Pomfret, 2006). Clearly, future research designed to assess the validity and reliability of the hypothesised framework is required.

In line with Pomfret's (2006) review, Willig (2008) identified a number of themes that strongly resembled several key characteristics related to flow experiences (Csikszentmihalyi, 2000). More specifically, Willig (2008) interviewed eight extreme sports practitioners, including three mountaineers, as a means to investigate the meanings people attribute to their participation in high risk sports. Phenomenological analysis

revealed nine themes: Context, Challenge, Suffering, Other People, Mastery and Skills, Contrast, Being in the Present, Compulsion, and Pleasure (Willig, 2008). The themes of Challenge, Mastery and Skill, and Being in the Present exhibited a striking likeness to specific defining characteristics of flow. For example, Willig (2008) commented on participants' desire to feel stretched and test their abilities to the limit within their chosen activity. Importantly, however, Willig (2008) highlighted participants' care to assess their limits carefully, never choosing to actively take on challenges they did not feel equipped to deal with effectively. Consequently, Willig's (2008) description of the emergent theme Challenge corresponded highly with the same feature outlined in the theory of flow, in which a match between challenge and skill is considered paramount (Csikszentmihalyi, 2000). Similarly, participants talked frequently about the need to have a certain level of proficiency in relevant skills, skills that they had mastered over time, in order to perform effectively and experience a sense of achievement. The notion of mastery, testing of one's abilities and consequent feelings of accomplishment is something that clearly tallied with flow theory's emphasis on the link between skill and optimum functioning and experiences. A final theme presented by Willig (2008) that clearly resonated with the focus characteristic of flow was Being in the Present. Participants talked about the high levels of focus they experienced when taking part in their chosen activities. This acute level of focus was described as so intense as to prevent all other stimulation from receiving any attention. Overall, it is clear that a number of the themes identified by Willig (2008) were highly comparable to features described in flow theory (Csikszentmihalyi, 2000).

Importantly, given the focus of the current thesis, Willig (2008) noted that the mountaineers in the study reported flow-like experiences as central to their drive to participate in this particular activity far more frequently than the skydivers within the group. This difference alone highlights the limits to studies of this kind that group together a variety of activities that, at first sight may appear very similar, yet after closer inspection appear quite distinct, something that Willig (2008) herself remarked upon. On these grounds it would appear advisable for research designed to acquire a full understanding of the motivations of mountain climbers to focus on samples comprised of this population alone, rather than to amalgamate and analyse the experiences and accompanying motivations of various high

risk sports participants. Accepting this potential limitation, the findings presented by Willig (2008) provided more support for the argument that seeking out thrills through engagement in high risk activities has very little motivational import for mountain climbers, however flow represented a markedly more valued experience. Cleary, flow offers yet another potentially useful perspective for research designed to unveil the motivational grounds to people's participation in mountain climbing and similarly skilled and challenging activities.

1.4.2.3 Other mountain climbing-related research

Although not strictly grounded in established theoretical perspectives, a number of additional factors have been identified as influential in people's participation in mountain climbing, for example, the aesthetics of the environment, and the ability to gain greater access to the natural environment (e.g., Ewert, 1993, 1994; McIntyre, 1991); a sense of recognition and identity (e.g., McIntyre, 1991); self-signalling (e.g., Loewenstein, 1999); and meaning (e.g., Loewenstein, 1999).

In order to summarise fully the array of motivations for mountain climbing that have been identified to date, research specific to a few motivations highlighted above should be summarised. In brief, Loewenstein (1999) set out to explore the concept of non-consumption-related utility and chose mountaineering as the domain in which to explore this concept. Loewenstein (1999) defined consumption-related behaviours and their corresponding motives as those that offer the chance for material gain or for sensory pleasure, therefore by default non-consumption-related behaviours are any acts that do not offer either of these rewards. Appropriately, Loewenstein (1999) portrayed mountaineering as a fundamentally arduous and tortuous pursuit that offers little in the way of tangible rewards or mass-level acclaim, and thus thought it represented an activity highly suited to the exploration of non-consumption-related utility. Essentially, by analysing numerous literary accounts of a variety of mountain-based activities Loewenstein (1999) identified four types of non-consumption-related motive: 'self-signalling', 'goal completion', 'mastery', and 'meaning'. Although 'goal completion' and 'mastery' represent motives that are for all intents and purposes largely akin to the motivations accomplishment and skill development previously discussed, both 'self-signalling' and 'meaning' represent

motivations not yet considered. For Loewenstein (1999) 'self-signalling' referred to the opportunity mountaineering provides people with to show to themselves they possess positive attributes, such as courage, stamina and bravery. The motivation 'meaning', however, was defined by Loewenstein (1999) as the opportunity mountaineering provides to acquire a "new perspective on life" (p.331). More specifically, Loewenstein (1999) suggested that people can discover what is truly important to them and how they feel about different aspects of their lives as a result of the challenges and hardships often faced during mountaineering. Even though Loewenstein's (1999) research identified a number of potentially important motivations for mountaineering, the relevance and salience of each to specific mountain-based pursuits is not entirely clear given that Loewenstein (1999) reviewed a broad range of mountain-based activities in his study. Consequently, future work needs to explore for which types of mountain pursuit are particular motivations reported, and what significance and meanings are attributed to specific motivations.

Finally, worth mentioning given the thesis's focus on the motivational role of risk is a particular finding reported by Ewert (1993). Ewert (1993) asked a sample of climbers to complete a questionnaire on motivations for climbing directly following the completion of a high altitude expedition. One of the main research objectives was to identify any differences in the level of importance placed on different motivations by different types of climbers. Climbers were classified into three groups: guided, independent, and solo. Interestingly, the results showed those participants who climbed solo placed more importance on the item 'because of the risk' than did climbers from both the guided and independent groups. Clearly the very nature of solo climbing adds to the risks associated with climbing, therefore this finding is not surprising in itself. However, findings of this kind have underscored the importance of further research focused on the different levels of importance placed on risk by climbers both belonging to different types of climbing groups and participating in different types of climbing. Nonetheless, this study provided a useful starting point from which to progress given that it represents the only study that has directly compared the importance placed on a variety of motivations by distinct types of climbing group.

To summarise, having considered a diverse selection of research related to the motivations for mountain climbing, of considerable relevance to the current thesis is the rather ambiguous relationship between risk and mountain climbing participation as it is often portrayed in both empirical research and the popular press. On the one hand, mountain climbers are frequently depicted in the media as risk-seekers, adrenaline junkies living for the rush experienced as a result of taking serious risks (McNamee, 2007). However, the few psychological studies that have examined the relevance of risk to mountain climbing have presented weak and often contradictory findings concerning the motivational influence of risk on participation in mountain climbing (e.g., Ewert, 1993, 1994). Therefore, given the rising popularity of mountain climbing and the mixed research findings concerning this particular high risk activity to date, a comprehensive programme of research designed to elicit the motivational basis to this activity is both timely and justified.

1.5 Methodological considerations

Given the inclusion of both quantitative and qualitative methods within this thesis it is important to discuss briefly the main advantages and disadvantages associated with a mixed methods approach. Of relevance is research that has highlighted a wave of change in relation to opinions concerning the use of mixed methods in social research, with many now arguing for a methodological stance that embraces a variety of qualitative and quantitative methods (e.g., Bryman, 2006). It would seem that increasingly researchers are keen to combine different methods based on an ethos of pragmatism, where philosophical principles are put to one side and consideration of which methods provide the best research 'tools' takes precedence (Smith & Heshusius, 1986). Arguably, one of the main benefits associated with using mixed methods relates to the enhanced capacity to generate different and sometimes rich, detailed and nuanced knowledge about a given phenomenon. Another benefit concerns the superior validity and reliability of the findings that have derived from a mixed methods approach (Moran-Ellis, Alexander, Cronin, Dickinson, Fielding, Sleney, & Thomas, 2006). A consequence of the potentially greater knowledge acquired through mixed methods is the opportunity this then provides for research programmes to be modified accordingly at different stages of the research process in line with emergent

information, thus expanding further the understanding of a particular topic than would be possible if a single method approach was employed.

Although more recently the practice of a mixed methods approach has been extolled, one particularly noteworthy caveat to this recommendation concerns the appropriateness of a mixed methods approach. More specifically, concerns have been raised about the temptation to universally apply this approach in a 'belt and braces' manner without giving full consideration to the suitability of this approach to specific research questions (Moran et al., 2006). Clearly, in situations where certain methods add nothing to the research project then the token application of this approach becomes rather meaningless. It should be mentioned that, although uncommon, a degree of wariness remains concerning the incompatibility of findings generated from distinct approaches with some researchers still keen to observe the division between methods traditionally allied with particular epistemological schools of thought (Bryman, 2006).

Having considered the arguments for and against a mixed methods approach, the current thesis adopts an epistemological position that is compatible with both positivist and relativist philosophical stances, largely driven by a philosophy of 'pragmatism' (see Bryman, 2006; Maxcy, 2003). Essentially, in line with the aforementioned position of pragmatism, the combining of different methods throughout this thesis is principally motivated by the desire to acquire as comprehensive representation and understanding of people's motivations for, and experiences of mountain climbing as possible, paying particular attention to the often controversial role of risk.

1.6 Overview of the four empirical chapters

The review above highlights the complexity surrounding research on risk with different schools of thought advocating different approaches. Moreover, although the reviewed literature features only selected theoretical perspectives existing within the field of risk research, it serves to underscore the importance of selecting both methodological approaches and theoretical perspectives that are appropriate for the examination of certain types of research questions related to risk. As has been illustrated, for example, the

demands of research designed to quantify individuals' perceptions of risk are clearly quite different to those of research hoping to provide a detailed account of the subjective meanings people attach to risk within a given behavioural domain.

The present thesis is primarily concerned with the motivational basis to mountain climbing, paying particular attention to the role of risk. As has been noted, mountain climbing represents an activity that has increased in popularity with participation in the UK steadily rising year on year. However, of critical importance to the current thesis, the limited available research on mountain climbing has presented a rather mixed picture with respect to risk. That is, risk is often construed as central to this activity, although also inconsistently and often weakly associated with people's motivations for participation. Additionally and somewhat remarkably, as far as the author is aware, no attempts have been made to combine both quantitative and qualitative methodologies as means to providing a more comprehensive and explanatory account of people's involvement in this activity. In order to provide a more integrated approach, the current thesis adopts a mixed method approach to the exploration of motivations for mountain climbing. Finally, it is hoped that by acquiring a better appreciation of the motivational basis to people's engagement in this risk-related activity, the current findings will also contribute to a deeper understanding of voluntary risk-taking generally.

Chapter 2 (Study 1)

As the above review suggests, research that has examined the importance of risk perceptions to continued participation in risk-related activities tends to adopt an approach characterised by a narrow focus on the negative attributes associated with these activities. Attentive to recent calls for a more balanced approach where both positive and negative attributes are evaluated in relation to the same activity, Chapter 2, employing a theory of planned behaviour framework (Ajzen, 1991), examined the relationship between a number of characteristics related to mountain climbing, including risk, challenge, achievement, and enjoyment, and attitudes and intentions towards participating in mountain climbing.

Chapter 3 (Study 2)

Mountain climbing is a varied activity with a great many types of climbing often subsumed under this general, collective term. Almost without exception, research into mountain climbing typically overlooks this diversity, either failing to acknowledge the different types of climbing, or treating the distinct types as if they are one and the same. In an attempt to provide a more refined approach to the study of this diverse activity, Chapter 3, using the same characteristics featured in Chapter 2, adopted a psychometric approach (Slovic, et al., 1980) as a means to identifying potential differences between the characterisation of eight different types of climbing. Of particular interest were any potential differences between the characterisations of the different types of climbing, specifically in relation to risk. Additional attention was paid to the individual structural representations of each type of climbing, together with the relationships between characteristic components identified for each type of climbing and attitudes towards participating in them.

Chapter 4 (Study 3)

For the most part, research focused on the motivational basis to mountain climbing tends to have favoured an approach solely designed to identify the relative importance attributed to discrete categories of motivation. In a bid to provide a more integrated approach, Chapter 4, employing means-end chain analysis (Reynolds & Gutman, 1988), investigated the structural organisation of motivations reported for three types of mountain climbing (*traditional climbing*, *winter climbing*, and *free soloing*). These three types of climbing were selected on the basis of their position in the component space featured in Chapter 3. To be more precise, the three types of climbing presented in this chapter were positioned relatively highly on the risk dimension that emerged in Chapter 3, and therefore, it was felt justified to select these particular types of climbing due to the current focus on risk.

Chapter 5 (Study 4)

This chapter sought to further expand upon the current understanding of the role risk plays in relation to people's motivations for mountain climbing by exploring the meanings climbers attribute to the risk inherent to mountain climbing. More specifically, using

interpretative phenomenological analysis (Smith, 1996), personal accounts of the relevance of risk to subjective motivations for mountain climbing were examined.

1.7 Summary of research questions

i. What are people's motivations for participating in mountain climbing?

ii. What is the relationship between different motivations and both attitudes and intentions towards participating in mountain climbing?

iii. Is risk a significant motivation for participating in mountain climbing?

iv. Are different types of mountain climbing characterised differently?

v. Are specific types of mountain climbing characterised as more risky?

vi. Which characteristics best predict attitudes to different types of mountain climbing?

vii. How are the different motivations reported for mountain climbing related to one another?

viii. What role does risk play in relation to people's motivations to participate in mountain climbing?

ix. What meanings do people attribute to the risk associated with mountain climbing?

Although the thesis chapters build on one another, aspects of each informed in part by the preceding chapters, the studies presented in each chapter are structured as individual, standalone articles. The final chapter presents a comprehensive discussion of the empirical research reported in chapters 2, 3, 4 and 5, before broadening the discussion to consider the current findings in relation to existing research and perspectives on both risk and mountain climbing. Finally, a number of possible future research directions are highlighted.

1.8 Summary

The preceding review outlined the principal approaches employed in existing research within the field of social psychology, and beyond, that has investigated risk-related behaviour. Moreover, given the particular focus of the current thesis, the review included an appraisal of the limited corpus of research on the motivational basis to mountain climbing, the risk-related behaviour central to the current programme of research. As has been discussed, a main criticism of psychological research into risk-related behaviours concerns the limitations of research that has focused on the negative aspects of varied risk-related behaviours to the exclusion of alternative positive attributes associated with the same behaviours (McKenna & Horswill, 2006). Partly in response to criticisms of this kind, and also driven by a wish to provide a broad and inclusive foundation from which the present research could progress, the next chapter presents a study that examined the motivational import attached to a diverse selection of mountain climbing-related beliefs of both positive and negative valence. Specifically, Study 1 sought to answer the following three research questions: (i) what are people's motivations for participating in mountain climbing?, (ii) what is the relationship between different motivations, attitudes and intentions towards participating in mountain climbing? and, (iii) is risk a significant motivation for participating in mountain climbing?

CHAPTER 2

Study 1: **Beyond risk: an investigation of motivations behind mountain climbing.**

2.1 Abstract

Recent literature has highlighted the limitations of research that focuses solely on people's perceptions of risk in order to elicit a comprehensive understanding of 'why' they participate in risk-related behaviours (e.g., McKenna & Horswill, 2006). The study (N = 232) reported here employed a theory of planned behaviour (Ajzen, 1991) framework that incorporated beliefs concerning risk together with, amongst other characteristics, beliefs about challenge, skill, and enjoyment in order to investigate the motivations of a sample of mountain climbers. Principal Components Analysis of the behavioural belief x outcome evaluation product terms revealed a six-component solution accounting for 64.1% of the variance. The components were labelled: *Accomplishment, Meaning, Engagement, Focus, Conflict,* and *Personal Risk*. When attitudes towards mountain climbing were regressed on these components, *Accomplishment*, *Engagement*, and *Personal Risk* all emerged as significant independent predictors. Interestingly, the *Personal Risk* component was the weakest of the significant predictors. The relative importance of risk as a motivator together with its function in relation to other motivating beliefs are discussed.

2.2 Introduction

"Because it's there."

Mallory's (1923) famous response to a reporter who enquired as to his reasons for attempting to reach the summit of Everest unveils little or, arguably, no meaningful explanation as to why he, or anyone would want to attempt such a life-threatening challenge. Nevertheless, as a reply to the general question 'why?' which is often posed to those who perform risk-related behaviours, it is highly representative of people's initial inability (see Loewenstein, 1999) and often lack of inclination (see Lyng, 1990, 2005) to reveal what drives them to perform such potentially hazardous activities.

Although an abundance of psychological research literature exists concerning volitional risk-taking in the context of a wide range of risk-related behaviours, the ostensibly 'irrational' nature of many risk-related behaviours has bewildered, and continues to bewilder, those who seek to further the understanding of what compels people to perform such behaviours (Weber, Blais, & Betz, 2002). Moreover, this confusing state of affairs is exacerbated further by research showing an increase in people's knowledge of the potentially negative ramifications of a number of risk-related activities (e.g. Rotheram-Borus & Koopman, 1991). However, this increase in knowledge does not appear to translate into parallel decreases in their risk-related behaviours, or the adoption of behaviours purposefully aimed at minimising personal risk (Gerrard, Gibbons, & Bushman, 1996; Gibbons & Gerrard, 1995).

2.2.1 Perceptions of risk and risk-related behaviour

Until relatively recently, research concerning risk-related behaviour appears to have followed a general trend characterised by a somewhat restricted focus on perceptions of risk in relation to associated potential negative outcomes (McKenna & Horswill, 2006). More specifically, the vast majority of studies of this kind seem to have been based upon the notion that people's perceptions of personal threat are the best indicator of their corresponding risk-related behaviour. However, although evidence suggests that people sometimes make accurate appraisals of their own vulnerability and adjust their risk-related behaviour accordingly (e.g., Weinstein, Grubb, & Vautier, 1986), support for this relationship is often disputed, with numerous instances of a mismatch between perceived risk and risk-related behaviour (e.g., Cohen, Macfarlane, Yanez, & Imai, 1995; Gerrard, Gibbons, Benthin, & Hessling, 1996; Van der Pligt, 1998). That is, irrespective of people's ability to correctly evaluate threats to their health or safety, they regularly override this information, choosing to participate in the risk-related behaviour regardless. Although beyond the scope of the specific interests of this paper, a number of processes have been identified that help explain people's apparent failure to respond to knowledge about risks with risk aversive behaviour (e.g., 'optimistic bias', Weinstein, 1980).

Recent work by McKenna and Horswill (2006) has sought to move beyond previous research in which maladaptive processes have been the exclusive focus, exploring additional aspects of the decision-making process and also acknowledging the contribution made by perceptions of risk. More specifically, McKenna and Horswill (2006) suggested that perhaps the general trend of past risk-related research has been detrimental to the development of a full understanding of what role and extent of influence is attributable to the positive features of risk-related behaviours (McKenna & Horswill, 2006). Although comparatively rare, a few studies have incorporated measures of perceived benefits associated with risk-related behaviours (e.g., adolescent consumption of alcohol, Goldberg, Halpern-Felsher, & Millstein 2002; and having unprotected sex, Parsons, Halkitis, Bimbi, & Borkowski, 2000). Moreover, research findings have indicated a significant contributory influence of perceived benefits in predicting risk-related behaviours, thus indicating that it may be worthwhile pursuing this line of inquiry, or at least adopting an approach that takes into account both perceptions of risks and benefits, in relation to other risk-related behaviours.

In view of this, the present study assesses a variety of beliefs of both positive and negative valence in relation to one category of risk-related behaviour, namely mountain climbing. Unlike many of the health risk behaviours that have repeatedly provided the focus of research concerning risk-related behaviour, mountain climbing represents an activity where the element of risk cannot be exclusively interpreted as an unfortunate negative aspect of an otherwise appealing pursuit. Rather, risk appears to play a more complicated role in this specific behavioural domain, and is sometimes construed as a motivator itself (Lyng, 2005). However, it should be noted that the relationship between risk perception and participation in mountain climbing is far from clear. As such, the inconsistency highlighted by the often disparate accounts of the motivational role of risk perceptions, together with fluctuations in the relative importance attributed to such perceptions of risk, only serve to underscore the confusion surrounding this relationship (see Breivik, 1996; Ewert, 1994; McIntyre, 1991). Nevertheless, mountain climbing presents itself as an intriguing risk-related domain where characteristics such as danger, that are customarily evaluated as negative, may, in fact, be perceived as positive factors driving continued participation. One illustration of this

seeming contradiction comes from an observation made by Ewert (1987) when he discussed the importance of risk to outdoor recreationists, including mountain climbers: "risk-taking is central to the adventure-based recreation concept with an absence of risk resulting in a decrease in satisfaction and desire to participate." (p.7). Consequently, the present study explores further the relationship between a broad spectrum of beliefs, including perceptions of risk, in order to gain a fuller understanding of the relationships between each of these beliefs, and in turn, with intentions to participate in mountain climbing.

2.2.2 Determinants of utility: consumption versus non-consumption

Some risk-related activities provide the chance to receive substantial personal reward. A prime example of this category of behaviour is gambling, and it was this type of behaviour that provided the basis of much of the early research into the economic concept of utility (Edwards, 1992; von Neumann & Morgenstern, 1947). However, in the years that have followed, the concept of utility, and more specifically subjective expected utility (Savage, 1954; von Winterfeldt & Edwards, 1986), has been applied to numerous risk-related activities that vary considerably both in type and amount of reward that serve as recompense for risks taken (e.g., Weber et al., 2002). Consider, for example, buying a lottery ticket and parachute jumping. Both are defined by an element of risk-taking, but the nature of the risks that such behaviours present to those who perform them are clearly quite different. As such, it should not be surprising that the qualitative characteristics of the utility associated with such diverse behaviours are similarly varied, irrespective of the absolute value attributed to such behaviours. That is to say, both parachute jumper and gambler may arguably value the experiences associated with their respective activities equally. However, the types of value associated with the prospect of winning or losing money are qualitatively quite different to the values associated with the experience of free falling through the air, not knowing if your parachute will successfully open or not.

Relevant research has sought to address issues concerning the categorisation of behaviours in relation to the determinants of their utility (Loewenstein, 1999). To be more precise, it has been proposed that both motives and corresponding behaviours can be classified

according to whether they are broadly based on 'consumption', or otherwise (Loewenstein, 1999). Although Loewenstein does not provide a clear definition of consumption, he does provide a list of the type of behaviours and associated motives he considers to be consumption-orientated, including those that offer material gains or the chance for sensory pleasure. The recipient of such rewards does not have to be the decision-maker, and even if he or she is, the consumption of said rewards could be planned for the future, have been received in the past, or the consumption could be hypothetical, the rewards never actually consumed but merely expected (Loewenstein, 1999). Importantly, Loewenstein (1999) noted the relative absence of research into alternative, non-consumption sources of utility and suggests,

> "these motives have been left out of most economists' utility functions, not because their importance is denied, but because they are difficult to formalize in decision-theoretic terms." (p. 317).

To explore the notion of non-consumption-related utility, Loewenstein chose to examine the experiences of those who participate in mountaineering, an activity often characterised by a high degree of physical suffering for limited material gain (Macfarlane, 2004). However, it should be noted that Loewenstein focused on the struggles and challenges mountaineers faced, and in so doing failed to consider the sensory pleasures sometimes experienced while mountain climbing. Nevertheless, drawing on literary accounts of a variety of mountaineering pursuits, Loewenstein (1999) identified four categories of motive (viz., *self-signalling*, *goal completion*, *mastery*, and *meaning*) unrelated to the notion of consumption and thus provide some insight into alternative sources of motivation when trying to understand people's behaviour. In this case, *self-signalling* refers to the opportunity mountaineering provides people with to show themselves they possess positive attributes, such as determination and bravery. Moreover, Loewenstein highlighted the value yielded through such self-satisfaction, resulting from the consequent bolstering of individuals' self-esteem and egos. *Goal completion*, however, simply refers to the drive people experience to accomplish goals they have identified as personally important to achieve, and the consequent utility people receive as a result of such achievement. As for

mastery, this concerns the value people assign to the ability to perform skilfully and effectively, and is often associated with perceptions of greater personal control over the environment within which the behaviour takes place. Finally, *meaning* relates to the opportunity mountaineering provides to gain a "new perspective on life" (p.331). Moreover, it is suggested that the physical and mental struggles often experienced during mountaineering expeditions provide people with a sense of clarity with respect to personal priorities. Furthermore, Loewenstein (1999) has highlighted the ability of this pursuit, in extreme cases, to reveal to people aspects of their character of which they perhaps have previously been unaware. As such, Loewenstein hypothesised that both the improved insight into one's 'true' self and the provision of a renewed outlook provide potential sources of utility to those who participate in such an activity.

Exploring further the notion of consumption and non-consumption-related utility, the present study investigates the motivational basis of mountain climbing. Mountain climbing represents an inherently risk-related activity given the potentially grave consequences associated with both human error and the uncontrollable, powerful influences of the elements characteristic of the environment in which this activity takes place. Moreover, as mentioned earlier, the financial incentives and mass-level recognition associated with this minority activity are minimal, and in most cases non-existent (Loewenstein, 1999; Macfarlane, 2004). Clearly, conventional motivations associated with monetary gain do not apply to this activity. It should be noted, however, that the qualities associated with mountain climbing experiences are diverse, variably characterised as thrilling, exciting, affirming, frightening, painful, or disappointing, and therefore the potential for sensory reward exists, something that would be defined as consumption-related. Nevertheless, the argument stands that mountain climbing represents an activity highly suited to the exploration of non-consumption-related, unconventional motivations.

Previous studies concerning this behavioural domain and the reasons underlying people's participation have focused heavily on personality characteristics, viz. thrill-seeking (e.g., Rossi & Cereatti, 1993), sensation seeking (e.g., Gomà-i-Freixanet, 1991; Jack & Ronan, 1998) and the need for control (e.g., Kiewa, 2001; Llewellyn & Sanchez, 2008). Other

work concerned with mountain climbing has addressed the relevance of a number of motives akin to those identified by Loewenstein's (1999) work including self-determination (e.g., Kiewa, 2001), and mastery (e.g., Lester, 2004; Slanger & Rudestam, 1997), together with positive states such as edgework experiences (Lyng, 1990) and flow experiences (e.g., Delle Fave, Bassi, & Massimini, 2003; Mitchell, 1983). This paper presents the first application of the theory of planned behaviour (Ajzen, 1991) to this particular risk-related activity.

2.2.3 The theory of planned behaviour and risk-related behaviour

Subjective expected utility provides the basis to the theory of planned behaviour (TPB, Ajzen, 1991) that states that people's attitudes reflect the summed products of relevant behavioural beliefs and corresponding outcome evaluations. The theory posits that attitudes together with subjective norms and perceptions of behavioural control predict intentions to perform a specified behaviour, which in turn are hypothesised as the direct antecedent of that behaviour (Ajzen, 1991). The TPB has been applied to the study of numerous behaviours that are potentially harmful to individuals' health, be that the accumulative impact of smoking cigarettes (De Vries, Dijkstra, & Kuhlman, 1988) or consuming high levels of alcohol (Conner, Warren, Close, & Sparks, 1999), or the potential fatality associated with drink driving (Armitage, Norman, & Conner, 2002). It could be argued that the general appeal of this model lies in its ability to analyse both positively and negatively evaluated beliefs associated with a behaviour. Traditionally however, past applications of the TPB have tended to focus on perceptions of risk associated with health risk-related behaviours, with the assessment of benefits conventionally only considered in relation to the rewards associated with abstaining from the target behaviour, or the uptake of a health protective behaviour (Goldberg et al., 2002; McKenna & Horswill, 2006). In an attempt to redress the balance, the current paper addresses both negatively and positively evaluated behavioural beliefs associated with the performance of the same risk-related activity (e.g., McKenna & Horswill, 2006).

2.2.4 The present study

This paper presents an exploratory study aimed at uncovering the motivations that underlie people's participation in mountain climbing, a risk-related activity that continues to grow in popularity (Macfarlane, 2004). In so doing, the paper plans to advance the current understanding of people's reasons for participating in this particular category of risk-related behaviour, thereby moving beyond the predominant trend in risk-related research to focus simply on perceptions of personal vulnerability (McKenna & Horswill, 2006).

Using a TPB framework (Ajzen, 1991), participants' behavioural beliefs, attitudes and intentions were assessed in relation to their participation in mountain climbing. More specifically, the present study (i) explores the interrelatedness of the different behavioural beliefs previously identified as relevant to people's participation in mountain climbing, (ii) assessed the ability of these beliefs to predict participants' attitudes towards participating in mountain climbing, (iii) considers the specific nature of such beliefs, namely, whether they can be classified as consumption-orientated or otherwise and, (iv) assesses the predictive utility of attitudes in relation to intentions to participate in mountain climbing.

2.3 Method

2.3.1 Participants

All participants were members of British Mountaineering Council (BMC) affiliated clubs at the time of the study. Each of the 395 clubs featured on the BMC website were contacted and asked to participate in an internet survey resulting in a total of 232 respondents (53 women, 179 men). The mean age was 33.78 years (*SD* = 13.02), with ages ranging from 17 to 73 years. Participation was on an unpaid, voluntary basis.

2.3.2 Materials

An internet-based questionnaire entitled 'Attitudes towards mountain climbing' (see Appendix 2.1) was constructed to assess participants' views and experiences of their participation in mountain climbing. More specifically, items assessing components of the TPB and motives to participate in mountain climbing were included. Information concerning sex, age, nationality and previous experience was also collected. The questions

featured in the questionnaire are described below (unless otherwise indicated, response scales, indicated in parentheses, were 7-point and fully anchored; items were reverse coded were necessary).

2.3.3 Measures

2.3.3.1 Behavioural beliefs

Twenty-five behavioural belief items were included: "My participating in mountain climbing in the future will… a) "…be physically challenging", b) "…improve my fitness", c) "…give me a sense of achievement", d) "…give me a sense of satisfaction", e) "…provide me with an opportunity for adventure", f) "…improve my mental focus", g) "…develop my presence of mind", h) "…give me a chance to take risks", i) "…allow me to get closer to nature", j) "…mean that I get to visit beautiful, wild places", k) "…be socially enjoyable", l) "…allow me to escape the routine of everyday life", m) "…be a spiritually enriching experience", n) "…give me a sense of meaning", o) "…give me a sense of personal unity", p) "…be a sensuous experience", q) "…give me a real buzz", r) "…be a euphoric experience", s) "…be physically painful", t) "…be potentially injurious", u) "…be dangerous", v) "…conflict with my personal life", w) "…conflict with my work commitments", x) "…put pressure on the natural environment", and y) "…make me concentrate fully on the present moment" (*extremely unlikely* [-3] to *extremely likely* [+3]). These behavioural beliefs were elicited in a pilot study (N = 30, see Appendix 2.2) employing the structure of standard theory of reasoned action procedure (Ajzen & Fishbein, 1980). All participants in the pilot study were members of British Mountaineering Council affiliated clubs at the time of the study. Participation was voluntary and unpaid.

2.3.3.2 Outcome evaluations

Corresponding outcome evaluation items for each of the behavioural belief items assumed the following format: "A physical challenge is…" (*extremely bad* [-3] to *extremely good* [+3]).

2.3.3.3 Attitudes

Attitudes were assessed using a semantic differential measure that comprised five items that asked participants to respond to the following statement: "For me, participating in mountain climbing in the future would be…" (*not at all good* [+1] to *extremely good* [+7]), (*not at all beneficial* [+1] to *extremely beneficial* [+7]), (*not at all wise* [+1] to *extremely wise* [+7]), (*not at all pleasant* [+1] to *extremely pleasant* [+7]), and (*not at all enjoyable* [+1] to *extremely enjoyable* [+7]). The mean of the five items was used ($\alpha = .84$). A general measure of attitudes comprised two items "My attitude towards my participating in mountain climbing in the future is…" (*not all positive* [+1] to *extremely positive* [+7]). The mean of these items formed an additional measure of general attitudes ($r = .77$, $p < .001$; see Ajzen & Fishbein, 1980), however, this measure does not feature in the main analyses.

2.3.3.4 Perceived behavioural control (PBC)

PBC was measured with two items: "How much control do you have over whether you do or do not participate in mountain climbing in the future?" (*no control* [+1] to *complete control* [+7]) and "It is mostly up to me whether or not I participate in mountain climbing in the future" (*strongly disagree* [+1] to *strongly agree* [+7]). The mean of the two items was used as the measure of PBC ($r = .64$, $p < .001$).

2.3.3.5 Subjective norms

The subjective norm measure also comprised two items: "Most people who are important to me probably think that I should participate in mountain climbing in the future" (*strongly disagree* [+1] to *strongly agree* [+7]) and "If I were to participate in mountain climbing in the future, most people who are important to me would probably…" (*disapprove strongly* [+1] to *approve strongly* [+7]). Again, the mean of the two items was taken as a measure of subjective norm ($r = .88$, $p < .001$).

2.3.3.6 Behavioural intentions

The behavioural intention measure comprised three items: "I shall try to participate in mountain climbing in the future…" (*definitely shall not try* [+1] to *definitely shall try* [+7]), "I shall make an effort to participate in mountain climbing in the future" (*definitely false*

[+1] to *definitely true* [+7]) and "I intend to participate in mountain climbing in the future" (*definitely do not* [+1] to *definitely do* [+7]). The mean of the three items was used (α = .90).

2.3.3.7 Ambivalence

Using the same structure as Thompson, Zanna, and Griffin (1995) positive and negative evaluations of participant's principal climbing style were assessed via two 5-point items: "For a moment only consider the **positive** things about participating in your principal climbing style. Please rate how positive those positive things are." (*not at all positive* [+1] to *extremely positive* [+5], fully anchored), and "For a moment only consider the **negative** things about participating in your principal climbing style. Please rate how negative those negative things are." (*not at all negative* [+1] to *extremely negative* [+5], fully anchored). Using these values ambivalence was calculated as follows: first, a difference score was calculated by subtracting the 'negative things' from the 'positive things', this score was then incorporated into the Griffin formula (Thompson et al., 1995) to give the final measure of ambivalence:

$$\text{Ambivalence} = (P + N)/2 - |P - N|$$

Where *P* denotes the positive score and *N* the negative.

2.3.3.8 Mindfulness

A pool of thirteen items were constructed in an attempt to capture the defining characteristics of mindfulness specifically related to mountain climbing: "Please read the following statements carefully and indicate the extent to which you agree or disagree with each: When I am mountain climbing…" a) "…I feel completely focused on the present moment", b) "…I experience a heightened sense of awareness in relation to the moment-to-moment details of my immediate surroundings and actions", c) "…I find my mind wanders", d) "…thoughts concerning other aspects of my life pop into my mind making it hard for me to concentrate", e) "…I feel completely immersed in my actions", f) "…my movements tend to flow easily to the point that I feel completely unified with my activity",

g) "…I am easily distracted by unrelated thoughts that disrupt my actions", h) "…I feel highly alert", i) "…I find myself reflecting on my life at exactly the same time as I am actively climbing", j) "…I experience an overwhelming sense of undivided attention", k) "…I am simultaneously aware of both my internal bodily states and the immediate external environment", l) "…I experience a sense of focused fusion with my activity", and m) "…I feel very wakeful" (*very strongly disagree* [-3] to *very strongly agree* [+3]). The mean of the thirteen items formed a measure of mindfulness (α = .85), however this does not feature in the analyses presented here.

2.3.3.9 Motivations

The twenty-five behavioural belief items were rephrased in terms of motivation to create a measure of motivation: "Please indicate the degree to which the following factors motivate you to participate in mountain climbing:" a) "…a physically challenge", b) "…improving my fitness", c) "… a sense of achievement", d) "… a sense of satisfaction", e) "…an opportunity for adventure", f) "…improving my mental focus", g) "…developing my presence of mind", h) "…the chance to take risks", i) "… getting closer to nature", j) "…visiting beautiful, wild places", k) "…socially enjoyment", l) "…allowing me to escape the routine of everyday life", m) "… a spiritually enriching experience", n) "… a sense of meaning", o) "…a sense of personal unity", p) "…a sensuous experience", q) "…a real buzz", r) "…a euphoric experience", s) "…physically pain", t) "…potential injury", u) "…danger", v) "…conflict with my personal life", w) "…conflict with my work commitments", x) "…pressure on the natural environment", and y) "…concentrating fully on the present moment" (*not at all motivating for me* [-3] to *extremely motivating for me* [+3]). The mean of the thirteen items formed a measure of motivation (α = .92), however these items do not feature in the main analyses presented here.

Participants were also invited to make any additional comments or suggestions.

2.3.4 Design and procedure

This study was conducted using an internet-based questionnaire. Participants were asked to take part in the study by their respective club representative who had received a letter

together with leaflets requesting their club members' help with some research concerning attitudes towards mountain climbing. Club representatives either gave members a leaflet detailing the internet-based questionnaire's web address at their club meeting, or circulated the same information as featured on the leaflet via a collective club electronic mail. Participants were asked to complete the questionnaire within a given time period (approximately six weeks) and were reassured of their anonymity.

2.4 Results

2.4.1 The relationship between individual behavioural beliefs outcome evaluation product terms

A principal component analysis using varimax rotation was performed to explore the relationship between the twenty-five behavioural belief outcome evaluation product terms. A six component solution was produced accounting for 64.1% of the variance (see Table 2.1). The first component ('Accomplishment'; 31.04%) had the following six items loading heavily on it: *'physical challenge'*, *'achievement'*, *'satisfaction'*, *'fitness'*, *'buzz'* and *'socially enjoyable'* (α = .86). The second component ('Meaning'; 11.09%) had the following five items loading heavily on it: *'meaning'*, *'personal unity'*, *'spiritually enriching'*, *'sensuous'* and *'euphoric'* (α = .86). The third component ('Engagement'; 7.62%) had the following five items loading heavily on it: *'closer to nature'*, *'visit beautiful, wild places'*, *'escape routine of everyday life'*, *'opportunity for adventure'* and *'chance to take risks'* (α = .80). The fourth component ('Focus'; 5.22%) had the following three items loading heavily on it: *'presence of mind'*, *'mental focus'* and *'concentrate fully on present moment'* (α = .79). The fifth component ('Conflict'; 4.75%) had only two items loading heavily on it: *'conflict with my personal life'* and *'conflict with my work commitments'* (r = .64, p < .001). The item *'put pressure on the natural environment'* was not included in the final computation of the Conflict component due to the significant increase in the α score when this item was deleted. The final component ('Personal Risk'; 4.35%) had the following three items loading heavily on it: *'potentially injurious'*, *'dangerous'* and *'physical pain'* (α = .67).

Factor scores were created for each component by calculating the mean of the item scores that loaded heavily on each component, thus making any comparisons across variables more intelligible (due to the match in scale).

Table 2.1 Principal components analysis of behavioural belief outcome evaluation product terms.

Behavioural belief	Components				
	Accomplishment	Meaning	Engagement	Focus	Conflict Personal Risk
Physical challenge	**.790**				
Sense of achievement	**.782**				
Sense of satisfaction	**.739**				
Improves my fitness	**.698**				
A real buzz	**.637**	.430			
Socially enjoyable	**.470**		.401		
Sense of meaning		**.829**			
Sense of personal unity		**.827**			
Spiritually enriching experience		**.788**			
Sensuous experience		**.740**			
Euphoric experience	.403	**.591**			
Get closer to nature			**.793**		
Visit beautiful, wild places			**.779**		
Escape routine of everyday life			**.568**		
Opportunity for adventure	.529		**.565**		
Chance to take risks			**.483**		
Develop my presence of mind				**.767**	
Improve my mental focus				**.697**	
Concentrate fully on the present moment				**.638**	
Conflict with personal life					**.849**
Conflict with work commitments					**.848**
Put pressure on the natural environment					**.435**
Be potentially injurious					**.778**
Be dangerous					**.750**
Be physically painful					**.685**

2.4.2 Predicting attitudes towards mountain climbing with behavioural belief components

Using the factor scores, a hierarchical multiple regression was carried out to examine the relationship between the behavioural belief outcome evaluation product term components and attitudes towards participating in mountain climbing. The behavioural belief outcome evaluation product term components were collectively entered in a single step. Overall, the model was a significant predictor of attitudes towards participating in mountain climbing (R = .54; F [6, 225] = 15.26, p < .001). Closer inspection of the beta values for the individual behavioural belief outcome evaluation product term components revealed significant effects for three of the six components: *Accomplishment* (β = .23, p = .006), *Engagement* (β = .25, p = .002) and *Personal Risk* (β = .12, p = .04) Conversely, *Meaning* (β = .07, p = .32), *Focus* (β = .08, p = .26) and *Conflict* (β = .02, p = .71) did not yield significant effects (see Table 2.2). Thus generally, participants who had higher scores for *Accomplishment*, *Engagement* and *Personal Risk* tended to report more positive attitudes towards mountain climbing.

A further regression of attitudes towards mountain climbing on the individual behavioural belief outcome evaluation product term items included in the Personal Risk component was performed (R = .20; F [3, 228] = 3.08, p < .03). Results indicated a significant independent effect for 'danger' alone ('physical pain', M =.56; SD = 3.30; r = .11, p = .05; β = .12, p = .10; 'potential injury', M = -1.00; SD = 3.76; r = .02, p = .40; β = -.14, p = .10; 'danger', M = .08; SD = 3.31; r = .15, p = .01; β = .19, p = .01). Therefore, participants who had higher scores for the item 'danger' tended to report more positive attitudes.

Means, standard deviations, and inter-correlations for the behavioural belief outcome evaluation product term components and attitudes are shown in Table 2.2 The collinearity statistics for all the analyses presented were satisfactory with tolerance levels greater than .3 and VIF coefficients of less than 10 (Field, 2000).

Table 2.2 Hierarchical multiple regression of attitudes towards participating in mountain climbing on behavioural belief x outcome evaluation components (N = 232).

(a) Hierarchical multiple regression of attitudes towards mountain climbing

Step	Predictor	R	R^2	F_{change}	Final β
1.		.54	.29	15.26***	
	Accomplishment				.23**
	Meaning				.07
	Engagement				.25**
	Focus				.08
	Conflict				.02
	Personal Risk				.12*

(b) Correlation coefficients between test variables, means and standard deviations

	Variable	1	2	3	4	5	6	*M*	*SD*
1	Attitude							6.27	0.72
2	BBOE1	.46***						5.84	2.43
3	BBOE2	.33***	.45***					2.20	2.75
4	BBOE3	.47***	.67***	.43***				5.36	2.50
5	BBOE4	.38***	.56***	.50***	.53***			3.29	3.21
6	BBOE5	.09	.05	.16**	.03	.07		.51	3.29
7	BBOE6	.11*	-.06	.11	-.04	.01	.30***	-.12	2.68

*p < .05. **p < .01. ***p < .001.

2.4.3 Predicting intention to participate in mountain climbing

A hierarchical multiple regression was carried out of intentions to participate in mountain climbing on attitudes (Step 1), subjective norms (Step 2), and PBC (Step 3). Overall the model was a significant predictor of intentions (R = .59; F [3, 228] = 39.35, p < .001). Moreover, the inclusion of both attitudes (F_{change} = 109.22, p < .001) and PBC (F_{change} = 5.70, p = .018) resulted in significant changes in the percentage of variance explained; while, the addition of subjective norm (F_{change} = .92, p = .34) did not (see Table 2.3). Final beta values revealed significant independent predictive effects for attitudes (β = .51, p < .001) and PBC (β = .14, p = .018), but not for subjective norms (β = .03, p = .56; see Table 2.3). Thus,

participants who held more positive attitudes towards mountain climbing tended to report greater intentions to participate in this activity. Similarly, participants who perceived greater behavioural control were more likely to report significantly stronger intentions to mountain climb. Conversely, while subjective norm was positively related to behavioural intentions, if failed to make a significant independent contribution to participants' intentions to mountain climb. So, attitudes were clearly the strongest predictor of intentions, thus underlining the need to examine what predicts attitudes themselves.

Means, standard deviations, and inter-correlations for behavioural intentions, attitude, subjective norms, and PBC are shown in Table 2.3.

Table 2.3 Hierarchical multiple regression of intentions to participate in mountain climbing on attitudes, subjective norms, and perceived behavioural control (N = 232).

(a) Hierarchical multiple regressions of intentions to participate in mountain climbing

Step	Predictor	R	R^2	Increment to R^2	F_{change}	Final β
1.	Attitude	.57	.32	.322	109.22***	.49***
2.	SN	.57	.33	.003	0.92	.04
3.	PBC	.58	.34	.016	5.7*	.14*

(b) Correlation coefficients between test variables, means and standard deviations

	Variable	1	2	3	*M*	*SD*
1.	Intentions				6.79	0.65
2.	Attitude	.57***			6.27	0.72
3.	SN	.19**	.25***		5.45	1.38
4.	PBC	.34***	.38***	.23***	6.36	0.79

*p< .05. **p < .01. ***p < .001. SN = Subjective Norm; PBC = Perceived Behavioural Control

2.5 Discussion

Taken together, the results reported here suggest that people's attitudes towards mountain climbing, an activity commonly defined by risk, are largely determined by beliefs unrelated to perceptions of risk. More specifically, of the behavioural belief outcome evaluation product term components identified in this study, both *Accomplishment* and *Engagement*

were the strongest predictors of attitudes towards mountain climbing. In comparison, however, the component *Personal Risk* had a relatively weak significant relationship to attitudes. The remaining behavioural belief outcome evaluation product term components: *Meaning*, *Focus* and *Conflict* were not significant predictors of attitudes. The study also provides support for the TPB in relation to the prediction of participants' behavioural intentions to participate in mountain climbing. Moreover, the results suggest that a number of the beliefs and values motivating people's mountain climbing are not related to consumption, thus demonstrating the need to give additional consideration to non-consumption sources of utility. A more thorough discussion of each of these general points follows.

The results concerning the predictive effects of the bb.oe components in relation to attitudes seem to provide some support for the argument that behavioural intentions are guided by attitudes that constitute more than beliefs and evaluations concerning the risks associated with a behaviour (Goldberg et al., 2002; McKenna & Horswill, 2006). The significance of both the *Accomplishment* and *Engagement* components is not surprising given the inherently challenging nature of this activity and the type of environment in which it takes place. Moreover, the present findings mirror existing research that demonstrates the importance of self-testing (Ewert, 1994) and the environment (McIntyre, 1991) to participation in mountain climbing. Specifically, values associated with challenge and the environment are clearly reflected in the items 'physical challenge' and 'get closer to nature' that load heavily on the *Accomplishment* and *Engagement* components, respectively.

Addressing the marginal relevance of risk perceptions to attitudes in this study, the correlation data only serve to underline this weak relationship, with the component *Personal Risk* only being very weakly positively related to attitudes. More specifically, closer inspection of the relationship between *Personal Risk* and attitudes hints at a predominant influence exerted by the item, 'dangerous'. Thus, it could be argued that both perceptions of physical pain and potential injury are not salient to participants' attitude constructions in this case. However, danger, a characteristic often associated with the

elements of adventure and excitement within this domain (Lyng, 2005), contributes considerably more to participants' overall attitudes.

Taken together, the current findings bolster suggestions that when designing future research concerned with understanding the participation in behaviours that have been traditionally defined by their association with potential risks, it is necessary to move beyond a research paradigm that appears to prioritise risk judgements (McKenna & Horswill, 2006).

As previously mentioned, research concerning the motivational importance attributable to risk within the behavioural domain of mountain climbing has produced mixed findings (see Ewert, 1994; Delle Fave et al., 2003). Given these research results and those presented here, it is clear that absolute rejection of the importance of risk perceptions, and perhaps more importantly the notion of risk generally, would be unduly hasty. Clearly, risk perceptions do not account for participation to the exclusion of all other factors, and it would appear that the possibility exists that when perceptions of risk are considered alongside other potentially motivating beliefs and values, the significance of perceptions of risk may be comparatively weak.

Nevertheless, risk perceptions do appear to feature at some level in some people's motivations to participate in mountain climbing (e.g., Delle Fave et al., 2003). Moreover, some research has hinted at the idea that exposure to risk operates as a necessary condition for the accomplishment of goals associated with mountain climbing (Delle Fave et al., 2003). Thus, it could be argued that opportunities characterised by the potential for some sort of loss provide people with a source of value either in themselves, or as a means to achieve states only reached when risks have been taken. In order to establish and assess more clearly the role performed by risk, it may be argued that future research needs to adopt a more rigorous approach examining links between specific motivating factors together with conditional relationships between such factors, rather than just the proportional relevance attributable to individual factors themselves (see Bagozzi, Bergami, & Leone, 2003). Similarly, it could be argued that in some instances certain characteristics, such as risk, motivate behaviour because they are necessary for the accomplishment of

other feelings that motivate the same behaviour. In other cases, such specific characteristics may not be *necessary* to, but increase the value attached to additional sources of motivation (see Higgins, 2006). Clearly more work concerning the potential relationships between various behavioural beliefs relevant to this behavioural domain needs to be addressed.

Turning to issues concerning the determinants of utility, the present study examined a range of potentially motivating beliefs and values some of which could be broadly construed as based on consumption, however many of which clearly fall outside the parameters implied by Loewenstein's (1999) description of what behaviours are based on consumption. Thus, the results presented here lend support to the argument that sources of utility not based on material gain or sensory pleasure are relevant to the appreciation of certain types of behaviour, in this case mountain climbing (Loewenstein, 1999). Specifically, when the components that accounted for a significant amount of variance in behavioural intentions are considered, namely *Achievement*, *Engagement*, and *Personal Risk*, each of them essentially represent non-consumption sources of utility. Although *Achievement* includes items that refer to the social enjoyment and buzz associated with mountain climbing, both of which could be seen as sensory pleasures derived from consumption of sorts (Loewenstein, 1999), the majority of items included in this component concern physical challenge, achievement, satisfaction and improvements in fitness. So, this component appears to be more akin to the concepts of goal-completion and mastery (Loewenstein, 1999), and therefore, seems to provide participants with utility via the accomplishment of mountain climbing-related aspirations and the associated developments in levels of fitness and positive experiences of fulfilment.

The component labelled *Engagement* also suggests participants assign value to beliefs that clearly represent something other than consumption. For instance, items such as 'escape routine of everyday life' and 'opportunity for adventure' allude to the potential utility attached from avoiding the possible monotony and restrictions associated with daily routines (see Lyng, 1990). Similarly, items 'get closer to nature' and 'visit beautiful, wild places' could be taken to imply the value mountain climbers attached to being absorbed in

the environment in which their activity usually takes place and feeling a certain sense of unity with it through their activity (see Csikzentmihalyi, 1975; McIntyre, 1991).

Finally, *Personal Risk*, and especially the item 'dangerous', could arguably reflect the utility attached to something that is potentially perceived as thrilling and admired by others (Dählback, 1990); alternatively, it could be interpreted as the value, consumptive or otherwise, potentially lost as a result of risks taken. Clearly, this component and its constituent items are a bit more ambiguous with respect to the basis of their utility. That is, the items that loaded heavily onto the component *Personal Risk* seem to represent values both related to consumption and non-consumption.

As has come to be expected (Armitage & Conner, 2001), the current study found support for the TPB model in relation to the prediction of participants' behavioural intentions to participate in mountain climbing. Moreover, closer inspection of the findings revealed significant predictive effects both for attitudes and PBC, indicating that those participants who held more positive attitudes and higher perceptions of behavioural control tended to report greater intentions to participate in mountain climbing. However, in line with numerous applications of the TPB (see Armitage & Conner, 2001 for a review), the inclusion of a measure of subjective norms failed to significantly improve the percentage of variance explained by the model.

Without doubt, further data need to be gathered in order to determine the specific nature of the utility attached to each of the motivational factors presented here. Nevertheless it would be fair to suggest that the current findings provide some evidence to support the argument that pursuing alternative non-consumption determinants of utility is necessary to the advancement of the overall understanding of the motives that provide the foundations to people's behaviour (Loewenstein, 1999). What is more, the present evidence bolsters suggestions that risk alone cannot advance the current understanding of people's motivation to participate in mountain climbing. However, 'risk' is a complex concept encompassing diverse meanings and representing different values to different people with respect to mountain climbing, and no doubt other activities. Clearly, future research into this and

similar risk-related behaviours needs to analyse further the concept of risk as an adjunct to evaluating the part it plays in motivating people's participation.

2.6 Summary

Overall, Study 1 identified six motivation components: Accomplishment, Meaning, Engagement, Focus, Conflict, and Personal Risk. Only three of the motivation components that were identified emerged as significantly positively related to attitudes towards participation in mountain climbing: Accomplishment, Engagement, and Personal Risk. The remaining motivation components were not significantly related to attitudes towards participating in mountain climbing. However, although Personal Risk was significantly positively related to attitudes, it accounted for less variance in attitudes than did both Accomplishment and Engagement. Together the findings led to the tentative conclusion that beliefs related to risk contribute to people's attitudes towards participating in mountain climbing; however, a number of alternative beliefs related to both accomplishment and engagement may be stronger predictors of attitudes towards participating in mountain climbing.

A number of participants from Study 1 commented on the potential limits to research that has grouped together different types of climbing under the umbrella term 'mountain climbing'. In response both to comments of this kind, and to the absence of any existing research specifically focused on the exploration of potential differences between a comprehensive range of different types of mountain climbing, Study 2 examined the characteristics associated with eight types of mountain climbing. It was hoped that by examining a variety of different types of mountain climbing it would be possible not only to ascertain whether different types of mountain climbing are characterised differently, but also to identify those for which risk was particular relevant. Additional attention was paid to which of the characteristics studied best predicted attitudes towards each of the eight types of climbing.

CHAPTER 3

Study 2: When is risk relevant? A psychometric study of the characteristics mountain climbers associate with eight types of climbing

3.1 Abstract

Research concerned with the experiences and motivations of people who participate in mountain climbing tends to overlook the varied nature of this pursuit, with comparisons between different types of climbing only occasionally receiving attention (e.g., Heywood, 1994; Morgan, 1998). Accordingly, the present study (N = 207) sought to examine a broad range of different types of climbing: *scrambling*, *bouldering*, *aid climbing*, *traditional climbing*, *sports climbing*, *ice climbing*, *free soloing*, and *deep water soloing*. Of particular interest was the notion of risk. Using a psychometric approach (see Slovic, 2000), the relationship between the eight types of mountain climbing and seventeen characteristics associated with mountain climbing was explored. A principal components analysis revealed a three-component solution accounting for 94.12% of the variance: *Challenge*, *Risk*, and *Enjoyment*. The position of each type of climbing in the resultant component space revealed some clear differences between these climbing types in relation to each of the three components. Additional attention was paid to the individual structural representations of each type of climbing, and attitudes towards participating in them. The findings presented here provide a useful insight into which particular types of climbing should be studied further to build upon the current understanding of the role and importance of risk to participation in mountain climbing. Both limitations of the present study together with suggestions for future research are discussed.

3.2 Introduction

Since its infancy in the mid 18th century as a recreational pursuit, as opposed to something endured to achieve other ends, mountain climbing has changed tremendously (Macfarlane, 2004). This transformation is reflected both in the variety of types of climbing that can be adopted to ascend a rock face or mountain, and the corresponding technologies (e.g., ropes, camming devices, bolts, synthetic fibre boots, and oxygen) available to people who attempt to achieve such heights (O'Connell, 1993). Traditional climbing, sports climbing, and free

soloing, represent just a few of the different types of climbing currently embraced by the climbing world. Moreover, mountain climbing is one of very few physical activities that is recognised both as a competitive sport and a recreational pursuit but not bound by rules and tight regulations. However, codes of practice are acknowledged, and to a large extent this is what makes one type of climbing identifiably different to another.

3.2.1 The relationship between mountain climbing and risk

Arguably, risk features at some level for all types of climbing, be that scaling a highly technical route for the first time without the aid of equipment or the support of a fellow climber, or undertaking a fully aided and assisted climb up a well-practiced route. However, research on mountain climbing's relationship to risk, and more specifically the notion that risk drives participation, has produced mixed findings (e.g., Ewert, 1994; Heywood, 1994; Pomfret, 2006). Irrespective of whether the inherently 'risky' nature of mountain climbing motivates people to climb, it seems fair to suggest that certain types of mountain climbing are more heavily characterised by risk than are others. Take, for example, free soloing, a type of climbing that (when strictly defined) prohibits the use of any equipment, the support of a climbing partner, or the inspection of a route prior to climbing it. This type of climbing is often referred to with terms such as 'pure' and 'authentic' (Heywood, 1994), and is popularly considered to be one of the most risk-related types of climbing. In contrast to this, sports climbing represents a type of climbing where the use of protective equipment, even the use of protection for a resting point during a climb, and detailed prior inspection and practice of a route are allowed. This type of climbing tends to emphasise the athleticism of climbing and is often frowned upon by traditionalists in the climbing world who suggest both that it is not 'real' climbing (O'Connell, 1993), and that all 'risks' have been removed (Heywood, 1994).

Longstanding debates concerning the attributes and values associated with certain types of climbing continue to this day (e.g., Mitchell, 1983; Morgan, 1998). Yet, to date, no attempts have been made to quantify the potential differences in the characteristics associated with the varied types of climbing subsumed within the broad category of mountain climbing. A limited body of research has explored the experiences and motives

of climbers (e.g., Ewert, 1994; Kiewa, 2001; McIntyre, 1991); however, almost without exception, participants have represented a group of people engaging in a single type of climbing (e.g., high-altitude mountaineering, Delle Fave, Bassi & Massimini, 2003; traditional climbing, Kiewa, 2001). Moreover, on the rare occasions that different types of climbing have been compared (e.g., Heywood, 1994), it has been within the context of qualitative exploration of the disparate principles and experiences associated with only 'traditional' and 'sports' climbing. The few attempts that have been made to quantify potential differences between subpopulations of the climbing fraternity have typically drawn divisions according to either level of experience (e.g., McIntyre, 1991) or group type: that is, guided versus independent versus solo climbers, rather than the type of climbing practised (e.g., Ewert, 1993).

Related research literature has continued to debated the value and importance attributed to risk with respect to people's motivations to participate in climbing (e.g., Ewert, 1993; 1994; Lyng, 2005; Macfarlane, 2004; Stebbins, 2005), thus underscoring the need to clarify, if possible, for which specific subdivisions of climbing risk is particularly characteristic and therefore potentially pertinent. Thus, the primary goal of the study presented here is to glean a greater understanding of the specific characteristics associated with different types of climbing, and, in so doing, identify any underlying dimensions along which potential differences between such types of climbing can be measured. Of particular interest is the relevance, or otherwise, of risk as a defining characteristic of different types of mountain climbing.

3.2.2 The psychometric paradigm and its applications

The psychometric paradigm is a methodological approach designed to facilitate research concerned with the reduction of a group of potentially related variables to a few coherent clusters and, in turn, identify any relationships between such interrelated variables and a different set of variables (Slovic, 2000). Early psychometric studies of this kind focused on perceptions of risk (Fischhoff, Slovic, Lichtenstein, Read, & Combs, 1978; Slovic, Fischhoff, & Lichtenstein, 1980), and paved the way for an abundance of research concerned with uncovering the structure of people's risk perceptions in relation to a

multitude of potential hazards (e.g., Benthin, Slovic, & Severson, 1993; Marsch, Bickel, Badger, & Kimberly, 2007; Sparks & Shepherd, 1994). Conventionally, a set of hazards are evaluated in terms of a number of risk characteristics, these characteristics are then factor analysed before each of the hazards are plotted in relation to the emergent factors (Slovic et al., 1980). Arguably, the appeal of this particular approach to the study of risk perception is that it permits the direct comparison of different hazards (Marsch et al., 2007), and allows one to survey a 'map' showing each hazard's position in relation to the risk-related dimensions identified.

Although many psychometric studies focused on risk tend to conform to the procedural parameters set out by the early research in this field, the diversity of domains, cultures, and samples studied using this methodology is particularly noteworthy. More specifically, the psychometric paradigm has been applied to the study of both homogenous groups of hazards including environmental risks (e.g., Böhm, 2003), and food hazards (e.g., Sparks & Shepherd, 1994), together with heterogeneous groups of hazards covering, for example, nuclear power, sunbathing, childbirth, downhill skiing, smoking, and commercial aviation (e.g., Slovic et al., 1980). Also, the samples employed by studies of this kind have been varied; some used convenience samples (e.g., Böhm, 2003), however others have targeted particular populations of interest, such as adolescents (Benthin et al., 1993), and drug users (Marsch et al., 2007).

The majority of psychometric studies have focused on the structure of risk perceptions. However, the methodology has also been used to uncover the structural representation of, amongst other things, feelings, both in relation to hazards (e.g., emotions associated with environmental risks, Böhm, 2003), and other domains not defined by risk (e.g., affective responses to different natural environments, Hinds & Sparks, 2011). The psychometric paradigm, arguably, has a lot to offer research designed to unveil both the structural organisation of groups of attributes, beliefs, or such like, and the relationship between such attributes and a different group of behaviours or objects. Thus, it was felt that this methodological approach was ideal for the analysis of possible differences in characterisation of different types of climbing.

3.2.3 The present study

To summarise, the principal aim of the present study was to identify components representing interrelated characteristics that, in turn, could identify potential differences between different types of climbing. A secondary aim of the study presented here was to examine the unique component structure for each type of climbing, and finally, to evaluate which components best predict attitudes towards participating in the corresponding type of climbing.

3.3 Method

3.3.1 Participants

Participants were 207 climbers (50 women, 157 men) with a mean age of 33.32 (*SD* = 11.11; range 13 to 66 years). Climbing experience ranged from less than one year to fifty-six years (*M* = 11.7 years, *SD* = 11.63). Participants completed an online questionnaire in return for a proportion of a donation of £200 being made to a mountain-related organisation of their choice from a list of eight provided (viz. The British Mountaineering Council, The Mountaineering Council of Scotland, The Mountaineering Council of Ireland, Mountain Rescue Council (England and Wales), Mountain Rescue Committee (Scotland), Irish Mountain Rescue Association, The Himalayan Trust UK, and Community Action Nepal).

3.3.2 Materials

An internet-based questionnaire entitled 'Your attitudes towards different types of climbing' (see Appendix 3.1) designed to evaluate participants' perceptions of, and attitudes towards, eight different types of climbing (*scrambling*, *bouldering*, *aid climbing*, *traditional climbing*, *sports climbing*, *ice climbing*, *free soloing*, and *deep water soloing*) was constructed. The eight types of climbing featured in the study were chosen on the basis that they are clearly established subdivisions of the broad umbrella activity mountain climbing. Moreover, the eight different types of climbing are recognised within the climbing arena as distinct approaches to this activity, and taken together embody the varied array of types of climbing available today (see Peter, 2004). Brief descriptions of the eight types of climbing (see Appendix 3.2) were presented at the beginning of the questionnaire following initial demographic questions concerning age, sex and nationality. It was possible

to scroll back to these descriptions at any stage during the completion of the questionnaire if the participants wished. Participants' experience of each of the eight types of climbing was also measured. Participants were also asked to indicate the type of climbing they participated in most. The following figures indicate the number of climbers who identified each of the types of climbing as their principal type of climbing: *scrambling*, $n = 9$; *bouldering*, $n = 32$; *aid climbing*, $n = 2$; *traditional climbing*, $n = 100$; *sports climbing*, $n = 27$; *winter climbing*, $n = 1$; *free soloing*, $n = 0$; *deep water soloing*, $n = 0$. Items measuring attitudes towards each of the eight types of climbing together with seventeen characteristics often associated with mountain climbing followed. It should be noted that although the characteristics were not supplied by the climbers participating in the study presented here, it was felt that the climbers who did provide the characteristics were similar to the participants of the current study. Unless otherwise indicated, response scales, indicated in parentheses, were 7-point and fully anchored.

For each of the following items, participants were required to respond in relation to each of the eight types of climbing separately.

3.3.3 Measures

3.3.3.1 Mountain climbing experience

Mountain climbing experience was assessed using one item: "Please indicate approximately on how many days a year you participate in each of the following types of climbing:…" (a space was provided to write the answer).

3.3.3.2 Attitudes

Attitudes were assessed using one item: "My attitude towards my participating in each of the following types of climbing in the future is…" (*not at all positive* [+1] to *extremely positive* [+7]).

3.3.3.3 Mountain climbing characteristics

Seventeen mountain climbing characteristics were included, each measured by a single item: "To what extent do you associate each of the following types of climbing with [x]?"

The mountain climbing characteristics listed were, *risk of injury*, *challenge*, *fitness*, *risk*, *skill*, *enjoyment*, *fear*, *excitement*, *focused attention*, *escape*, *a different perspective on life*, *getting in touch with the natural environment*, *socialising*, *self-development*, *ineffable quality (i.e., an experience that is difficult to put into words)*, *conflict with personal or work commitments*, and *a sense of who they are*. Each item was measured on a seven-point response scale (*not at all* [+1] to *to an extremely great extent* [+7]). The following note preceded the seventeen mountain climbing characteristic items listed above: "Your answers to the following questions presented below should reflect your immediate associations with the types of climbing themselves, not necessarily your personal experiences of them".

Finally, participants were invited to make any additional comments or suggestions.

3.3.4 Design and procedure

This study was conducted using an internet-based questionnaire. Participants were recruited via a number of climbing-related websites, forums and magazines. A brief advertisement together with the questionnaire's web address link, together with the researcher's electronic mail address, were provided.

3.4 Results

3.4.1 Principal Components Analysis of Mountain climbing characteristics

A principal components analysis (PCA) using varimax rotation was performed to explore the relationship between the mean scores for each of the seventeen mountain climbing characteristics for each of the eight types of climbing. A three component solution was produced accounting for 94.12% of the variance (see Table 3.1). The first component was labelled Challenge and accounted for 38.81% of the variance. Items loading heavily on this component included '*skill'*, '*challenge'*, and '*focused attention'* (α = .97). The second component was labelled Risk and accounted for 35.48% of the variance. Items loading heavily on this component included '*risk'*, '*opportunity to get a different perspective on life'*, '*risk of injury'*, and '*experience of fear'* (α = .95). The third component was labelled Enjoyment and accounted for 19.83% of the variance. Items loading heavily on this component included '*opportunity to escape'* and '*enjoyment'* (α = .82). A number of items

loaded onto more than one component (see Table 3.1). Crucially, Steven's (1992) recommended that with a sample size over 200 participants a critical value of 0.364 should be used when evaluating the significance of the loadings of individual items, however all of the loading scores for all of the items were higher than this cut-off point. Consequently, all items with double loadings were incorporated within the component on which they loaded highest. Importantly, in most cases the difference between the loadings of the same item on two different components was markedly different, with most items clearly belonging to one component rather than the other. However, for a few items, namely '*sense of who they are*', '*excitement*', and '*conflict with personal and work commitments*', the values for items with double loadings were arguably similar, posing more of a challenge with respect to their interpretation, something that is discussed further later. Figure 3.1 shows the position of each of the eight types of climbing in relation to the Challenge and Risk components. A second figure, Figure 3.2, shows the position of each of the eight types of climbing in relation to the Risk and Enjoyment components.

As Figure 3.1 shows, both *bouldering* and *sports climbing* are located relatively low on the Risk component but assume a moderate position on the Challenge component. Conversely, *scrambling* is located relatively low on the Challenge component but assumes a moderate position on the Risk component. Uniquely, *aid climbing* is located low both on the Challenge and Risk components. Unlike *aid climbing*, *ice climbing*, *deep water solo climbing*, *traditional climbing*, and, especially, *free climbing*, are located high on Risk with *ice climbing* the most strongly associated with Challenge out of these. However, Figure 3.2 shows that *aid climbing* is located low on the Enjoyment component (M = -1.80). In contrast, both *traditional climbing* (M = 1.38) and *scrambling* (M = .76) are located relatively high on the Enjoyment component. Figure 3.2 also shows that both *free soloing* and *ice climbing* are located higher than the other types of climbing on the Risk component.

Table 3.1 Overall principal components analysis loadings for mean ratings of mountain climbing-related characteristics (*N* = 207).

Characteristics	Components		
	Challenge	Risk	Enjoyment
Skill	**.98**		
Challenge	**.92**		
Focused attention	**.91**		
Fitness	**.86**		
Self-development	**.85**		
Sense of who they are	**.71**	.64	
Excitement	**.67**	.64	
Conflict with personal and work commitments	**.54**	.41	
Risk		**.92**	
Opportunity to get a different perspective on life	.43	**.86**	
Risk of injury		**.85**	
Experience of fear	.58	**.80**	
Ineffable quality	.54	**.79**	
Getting in touch with the natural environment		**.79**	.57
Opportunity to escape			**.96**
Enjoyment		-.67	**.94**
Socialising			**.68**

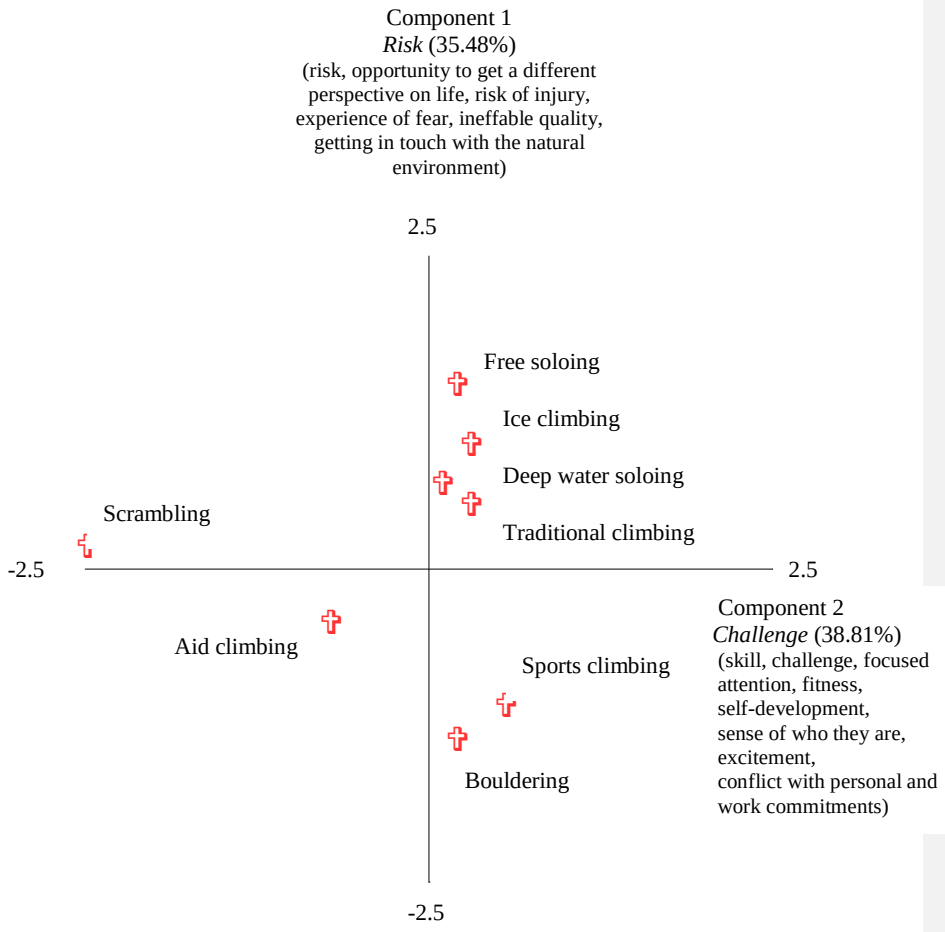


Figure 3.1 Types of mountain climbing represented in a two-component mountain climbing characteristics space: Risk and Challenge.

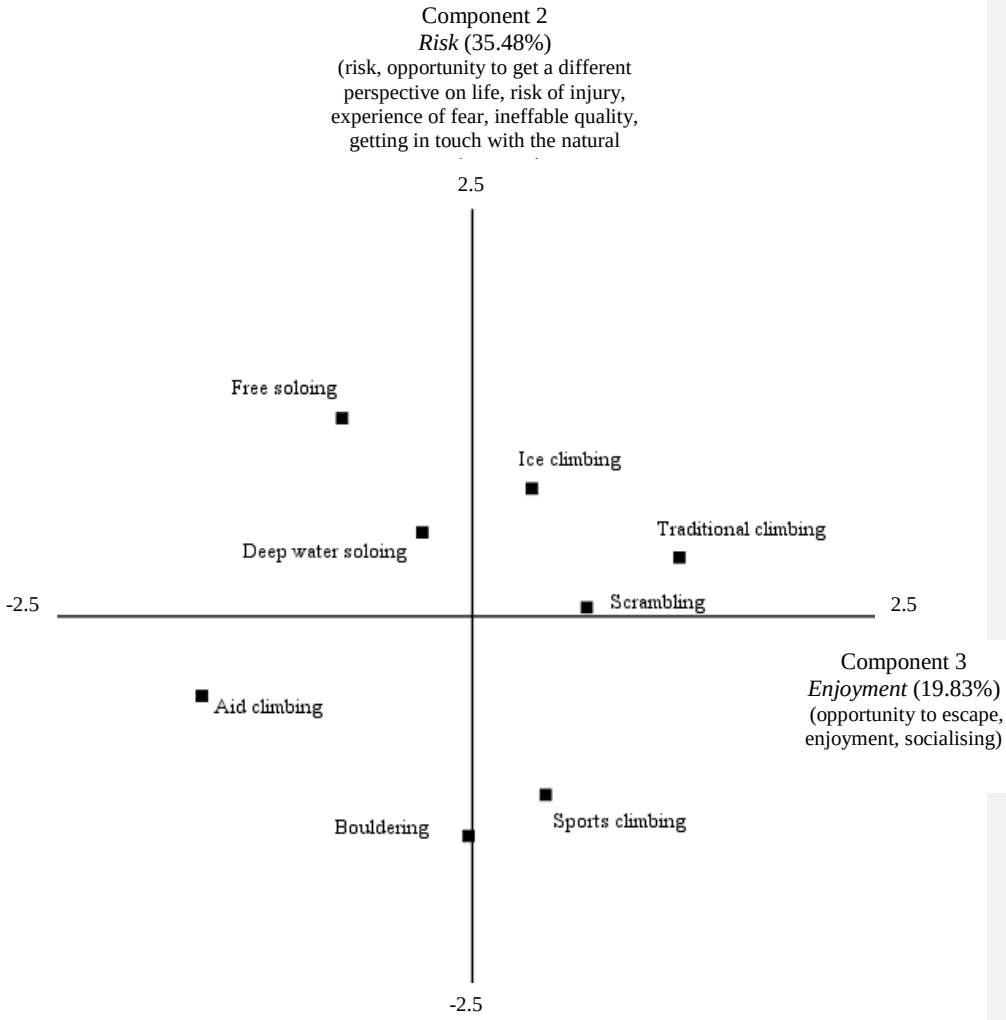


Figure 3.2 Types of mountain climbing represented in a two-component mountain climbing characteristics space: Risk and Enjoyment.

3.4.2 Individual Principal Components Analyses of Mountain climbing characteristics for each type of climbing

A series of eight individual PCAs with varimax rotation were performed to establish the organisation of the seventeen characteristics for each of the eight different types of climbing. Reasons for analysing the data at this level were twofold: by analysing the different types of climbing separately, it was possible to identify any differences between the types of climbing in relation to both the organisation and significance of the mountain climbing characteristics. Secondly, using the unique components identified for each type of climbing, it was possible to evaluate which of these components best predicted attitudes towards participating in the corresponding type of climbing.

Individuals' scores on the seventeen mountain climbing characteristic items in elation to each of the types of climbing were analysed in turn. Mountain climbing characteristics that load above .50 (Stevens, 2002) are given below (in parenthesis) together with their respective component loadings. It should be noted that the same label is given to components obtained from different PCAs that, in some cases, occasionally exhibit a degree of variation in the specific mountain climbing characteristics included in such components. For example, for both the *bouldering* group and the *traditional climbing* group, the Risk component comprised the following items: *risk*, *risk of injury*, and *experience of fear*. However, for the *aid climbing* group, the Risk component comprised items: *risk*, *risk of injury*, *experience of fear*, *skill*, and *challenge*.

Scrambling. A three component solution was produced accounting for 55.59% of the variance (see Appendix 3.3). The first component (24.20%) was labelled Risk (*risk* [.84], *experience of fear* [.77], *risk of injury* [.76], *challenge* [.74], *skill* [.70], *focused attention* [.60], and *fitness* [.51]; $\alpha = .87$). The second component (16.10%) was labelled Perspective and Self-Reflection (*getting in touch with the natural environment* [.79], *sense of who they are* [.73], *opportunity to get a different perspective on life* [.65], and *self-development* [.56]; $\alpha = .79$). The third component (15.30%) was labelled Enjoyment (*enjoyment* [.77], *excitement* [.64], and *ineffable quality* [.55]; $\alpha = .74$).

Bouldering. A three component solution was produced accounting for 52.65% of the variance (see Appendix 3.3). The first component (21.38%) was labelled Challenge (*enjoyment* [.75], *excitement* [.74], *focused attention* [.73], *challenge* [71], *skill* [.64], and *fitness* [.54]; α = .83). The second component (19.79%) was labelled Perspective and Self-Reflection (*a sense of who they are* [.81], *self-development* [.77], *a different perspective on life* [.64], *getting in touch with the natural environment* [.62], *opportunity to escape* [.56], *ineffable quality* [.53], and *social* [.53]; α = .82). The third component (11.48%), was labelled Risk (*risk* [.84], *risk of injury* [.79], and *experience of fear* [.66]; α = .70).

Aid climbing. A three component solution was produced accounting for 56.72% of variance (see Appendix 3.3). The first component (20.87%) was labelled Perspective and Self-Reflection (*a sense of who they are* [.75], *a different perspective on life* [.72], *getting in touch with the natural environment* [.72], *self-development* [.68], and *ineffable quality* [.66]; α = .84). The second component (19.79%) was labelled Risk (*risk* [.82], *experience of fear* [.81], *risk of injury* [.73], *challenge* [.58], and *skill* [.55]; α = .84). The third component (16.05%) was labelled Enjoyment (*enjoyment* [.81], *social* [.65], *excitement* [.60], *focused attention* [.58], and *opportunity to escape* [.54]; α = .76).

Traditional climbing. A three component solution was produced accounting for 54.21% of the variance (see Appendix 3.3). The first component (20.38%) was labelled Challenge (*enjoyment* [.76], *excitement* [.72], *skill* [.67], *challenge* [.65], *focused attention* [.64], *opportunity for escape* [.57], and *fitness* [.52]; α = .81). The second component (18.43%) was labelled Perspective and Self-Reflection (*self-development* [.82], *a different perspective on life* [.78], *a sense of who they are* [.77], *getting in touch with the natural environment* [.64], and *ineffable quality* [.51]; α = .81). The third component (15.41%) was labelled Risk (*risk of injury* [.79], *risk* [.79], and *experience of fear* [.61]; α = .75).

Sports climbing. A three component solution was produced accounting for 54.41% of the variance (see Appendix 3.3). The first component (20.79%) was labelled Challenge (*focused attention* [.81], *skill* [.72], *challenge* [.69], *fitness* [.68], *enjoyment* [.66], and *excitement* [.64]; α = .84). The second component (20.14%) was labelled Perspective and

Self-Reflection (*a sense of who they are* [.80], *self-development* [.72], *a different perspective on life* [.72], *getting in touch with the natural environment* [.69], and *ineffable quality* [.63]; α = .81). The final component (13.48%) was labelled Risk (*risk* [.88], *risk of injury* [.86], and *experience of fear* [.70]; α = .79).

Ice climbing. A three component solution was produced accounting for 49.48% of the variance (see Appendix 3.3). The first component (17.80%) was labelled Perspective and Self-Reflection (*a sense of who they are* [.81], *a different perspective on life* [.79], *self-development* [.73], *getting in touch with the natural environment* [.66], and *ineffable quality* [.60]; α = .81). The second component (16.54%) was labelled Enjoyment (*enjoyment* [71], *excitement* [.66], *opportunity to escape* [.60], *social* [.57], and *focused attention* [.51]; α = .71). The third component (15.15%) was labelled Risk (*risk* [.83], *risk of injury* [76], and *experience of fear* [70]; α = .76).

Free soloing. A three component solution was produced accounting for 51.14% of the variance (see Appendix 3.3). The first component (19.50%) was labelled Risk (*experience of fear* [.74], *challenge* [.73], *skill* [.69], *risk* [.69], *fitness* [.66], and *risk of injury* [.64]; α = .80). The second component (17.19%) was labelled Perspective and Self-Reflection (*a different perspective on life* [.73], *a sense of they are* [.71], *getting in touch with the natural environment* [.67], *ineffable quality* [.64], and *self-development* [.57]; α = .80). The third component (14.44%) was labelled Enjoyment (*enjoyment* [.70], *excitement* [.64], and *opportunity to escape* [.58]; α = .66).

Deep water soloing. A three component solution was produced that accounted for 55.88% of the variance (see Appendix 3.3). The first component (23.36%) was labelled Perspective and Self-Reflection (*a different perspective on life* [.78], *self-development* [74], *getting in touch with the natural environment* [.74], *a sense of who they are* [.70], *ineffable quality* [.67], *conflict with personal and work commitments* [.58], and *excitement* [.54]; α = .84). The second component (18.21%) was labelled Challenge (*challenge* [.80], *skill* [.72], *fitness* [.68], and *focused attention* [.65]; α = .75). The third component (14.32%) was labelled Risk (*risk* [.79], *risk of injury* [.72], and *experience of fear* [.58]; α = .77).

Although each of the principal components analyses produced a three component solution, there were differences in the specific components that emerged from the analyses of different types of climbing. Specifically, the analyses for *scrambling*, *aid climbing*, and *free soloing* resulted in the emergence of the following components: Risk, Perspective and Self-Reflection, and Enjoyment. *Bouldering*, *traditional climbing*, and *deep water soloing*, however, produced solutions that feature components labelled Challenge, Perspective and Self-Reflection, and Risk. Unlike like the other types of climbing, *ice climbing* produced a solution featuring the components Perspective and Self-Reflection, Enjoyment, and Risk.

3.4.3 Predicting attitudes towards the eight types of climbing

A series of eight multiple regressions was carried out to gauge which of the components identified by the individual PCAs would account for the most variance in attitudes towards participating in each of the eight types of climbing. Component scores were calculated using the mean of each component's constituent items.

Means, standard deviations, and inter-correlations for each component and attitudes for each of the multiple regressions (see Tables 3.2- 3.9) showed no excessively high inter-correlations between predictor variables, therefore eliminating the possibility of multicollinearity (Field, 2000). Again, across all analyses, the collinearity statistics for each variable were satisfactory obtaining tolerance scores greater than .52 and VIF coefficients of less than 1.94 (Field, 2000). In order to control for inflated familywise error associated with multiple comparisons, Bonferroni correction was applied. Therefore, as eight regression analyses were conducted, 0.006 was used as the criterion for significance (Field, 2000). However, even after this more stringent significance level was applied, all eight regression models still achieved statistical significance.

Scrambling. A multiple regression of attitudes towards *scrambling* on the components Risk, Perspective and Self-Reflection, and Enjoyment (R = .57; F [3, 203] = 32.98, p < .001) revealed significant independents effects only for Enjoyment (β = .59, p < .001), and not for Risk (β = .07, p = .31), or Perspective and Self-Reflection (β = -.11, p = .15; see Table 3.2).

Thus, more positive attitudes towards *scrambling* were associated with higher ratings on the Enjoyment component.

Table 3.2 Multiple Regression, Correlations, Means and Standard deviations for *scrambling* (*N* = 207).

(a) Multiple regression of attitudes towards participating in *scrambling*

	β	*R*	R^2
Risk	.07	.34***	.33***
Reflection	-.11	.28***	
Enjoyment	.59***	.57***	

(b) Correlation coefficients between test variables, means and standard deviations

	Variable	1	2	3	*M*	*SD*
1	Attitude				4.92	1.86
2	Risk	.34***			3.20	1.03
3	Reflection	.28***	.49***		4.18	1.34
4	Enjoyment	.57***	.54***	.60***	3.90	1.32

*$p < .05$, **$p < .01$, ***$p < .001$.

Bouldering. A multiple regression of attitudes towards *bouldering* on the components Challenge, Perspective and Self-Reflection, and Risk ($R = .64$; F [3, 203] = 45.74, $p < .001$) revealed significant independent predictive effects for Challenge (β = .66, $p < .001$) and Risk (β = -.15, $p = .008$), but not for Perspective and Self-Reflection (β = .01, $p = .93$; see Table 3.3). Therefore, more positive attitudes towards participating in *bouldering* were associated with higher ratings on the Challenge component. Conversely, more positive attitudes towards participating in *bouldering* were associated with lower ratings on the Risk component.

Table 3.3 Multiple Regression, Correlations, Means and Standard deviations for *bouldering* (*N* = 207).

(a) Multiple regression of attitudes towards participating in *bouldering*

	β	*R*	R^2
Challenge	.66***	.62***	.40***
Reflection	-.01	.38	
Risk	-.15*	.06**	

(b) Correlation coefficients between test variables, means and standard deviations

	Variable	1	2	3	*M*	*SD*
1	Attitude				5.14	1.81
2	Challenge	.62***			4.94	1.07
3	Reflection	.38	.62***		4.28	1.24
4	Risk	.06**	.32***	.24***	3.14	.93

*p < .05, **p < .01, ***p < .001.

Aid climbing. A multiple regression of attitudes towards *aid climbing* on the components Perspective and Self-Reflection, Risk, and Enjoyment (R = .45; F [3, 203] = 17.42, p < .001) revealed significant independents effects for Enjoyment (β = .40, p < .001), but not for Perspective and Self-Reflection (β = .08, p = .36) or Risk (β = -.01, p = .95; see Table 3.4). So, more positive attitudes towards *aid climbing* were associated with higher ratings on the Enjoyment component.

Table 3.4 Multiple Regression, Correlations, Means and Standard deviations for *aid climbing* (*N* = 207).

(a) Multiple regression of attitudes towards participating in *aid climbing*

	β	*R*	R^2
Reflection	.08	.32***	.21***
Risk	- .01	.27***	
Enjoyment	.40***	.45***	

(b) Correlation coefficients between test variables, means and standard deviations

	Variable	1	2	3	*M*	*SD*
1	Attitude				2.51	1.73
2	Reflection	.32***			3.71	1.34
3	Risk	.27***	.59***		4.07	1.10
4	Enjoyment	.45***	.61***	.57***	3.68	1.12

**$p < .01$, ***$p < .001$.

Traditional climbing. A multiple regression of attitudes towards *traditional climbing* on the components Challenge, Perspective and Self-Reflection, and Risk ($R = .61$; F [3, 203] = 39.07, $p < .001$) revealed significant independents effects for Challenge (β = .68, $p < .001$) and Risk (β = -.18, $p = .004$), but not for Perspective and Self-Reflection (β = -.06, $p = .37$; see Table 3.5). Accordingly, more positive attitudes towards participating in *traditional climbing* were associated with higher ratings on the Challenge component and lower ratings on the Risk component.

Table 3.5 Multiple Regression, Correlations, Means and Standard deviations for *traditional climbing* (*N* = 207).

(a) Multiple regression of attitudes towards participating in *traditional climbing*

	β	*R*	R^2
Challenge	.68***	.58***	.37***
Reflection	-.06	.23	
Risk	-.18**	.07**	

(b) Correlation coefficients between test variables, means and standard deviations

	Variable	1	2	3	*M*	*SD*
1	Attitude				6.25	1.27
2	Challenge	.58***			5.69	.76
3	Reflection	.23	.53***		5.26	1.25
4	Risk	.07**	.40***	.38***	4.64	.84

**$p < .01$, ***$p < .001$.

Sports climbing. A multiple regression of attitudes towards *sports climbing* on the components Challenge, Perspective and Self-Reflection, and Risk ($R = .47$; F [3, 203] = 18.90, $p < .001$) revealed significant independent effects for Challenge (β = .46, $p < .001$), but not Perspective and Self-Reflection (β = .04, $p = .61$) or Risk (β = -.08, $p = .20$; see Table 3.6). Therefore, more positive attitudes towards *sports climbing* were associated with higher ratings on the Challenge component.

Ice climbing. A multiple regression of attitudes towards *ice climbing* on the components Perspective and Self-Reflection, Enjoyment, and Risk ($R = .54$; F [3, 203] = 27.50, $p < .001$) revealed significant independent effects for both Enjoyment (β = .60, $p < .001$) and Risk (β = -.20, $p = .002$), but not for Perspective and Self-Reflection (β = -.10, $p = .17$; see Table 3.7). So, more positive attitudes towards *ice climbing* were associated with higher ratings on the Enjoyment component and lower ratings on the Risk component.

Table 3.6 Multiple Regression, Correlations, Means and Standard deviations for *sports climbing* (*N* = 207).

(a) Multiple regression of attitudes towards participating in *sports climbing*

	β	*R*	R^2
Challenge	.46***	.46***	.22***
Reflection	.04	.26***	
Risk	-.08	.05	

(b) Correlation coefficients between test variables, means and standard deviations

	Variable	1	2	3	*M*	*SD*
1	Attitude				5.14	1.72
2	Challenge	.46***			5.36	.92
3	Reflection	.26***	.53***		4.22	1.30
4	Risk	.05	.26***	.32***	3.37	.94

***p* < .01, ****p* < .001.

Table 3.7 Multiple Regression, Correlations, Means and Standard deviations for *ice climbing* (*N* = 207).

(a) Multiple regression of attitudes towards participating in *ice climbing*

	β	*R*	R^2
Reflection	-.10	.15*	.29***
Enjoyment	.60***	.49***	
Risk	-.20**	-.04	

(b) Correlation coefficients between test variables, means and standard deviations

	Variable	1	2	3	*M*	*SD*
1	Attitude				4.20	2.10
2	Reflection	.15*			5.19	1.29
3	Enjoyment	.49***	.52***		5.59	.85
4	Risk	-.04	.32***	.31***	5.31	.88

**p* < .05, ***p* < .01, ****p* < .001.

Free soloing. A multiple regression of attitudes towards *free soloing* on the components Risk, Perspective and Self-Reflection, and Enjoyment (R = .62; F [3, 203] = 42.25, p < .001) revealed significant independent effects for Risk (β = -.39, p < .001), and Enjoyment (β = .47, p < .001), but not for Perspective and Self-Reflection (β = .05, p = .42; see Tale 3.8). Thus, more positive attitudes towards *free soloing* were associated with lower ratings on the Risk component and higher ratings on the Enjoyment component.

Table 3.8 Multiple Regression, Correlations, Means and Standard deviations for *free soloing* (N = 207).

(a) Multiple regression of attitudes towards participating in *free soloing*

	β	*R*	R^2
Risk	-.39***	-.38***	.38***
Reflection	.05	.12*	
Enjoyment	.47***	.49***	

(b) Correlation coefficients between test variables, means and standard deviations

	Variable	1	2	3	*M*	*SD*
1	Attitude				3.28	2.02
2	Risk	-.38***			5.72	0.92
3	Reflection	.12*	.35***		5.12	1.43
4	Enjoyment	.49***	-.003	.43***	4.81	1.52

*p < .05, **p < .01, ***p < .001.

Deep water soloing. A multiple regression of attitudes towards *deep water soloing* on the components Perspective and Self-Reflection, Challenge, and Risk (R = .51; F [3, 203] = 24.19, p < .001) revealed significant independent effects for Perspective and Self-Reflection (β = .28, p < .001), Risk (β = -.44, p < .001), and Challenge (β = .19, p = .011; see Table 3.9). Therefore, more positive attitudes towards *deep water soloing* were associated with higher ratings on both the Perspective and Self-Reflection component and the Challenge component, and lower ratings on the Risk component.

Table 3.9 Multiple Regression, Correlations, Means and Standard deviations for *deep water soloing* (*N* = 207).

(a) Multiple regression of attitudes towards participating in *deep water soloing*

	β	*R*	R^2
Reflection	.28***	.33***	.26***
Challenge	.19*	.14*	
Risk	-.44***	-.33***	

(b) Correlation coefficients between test variables, means and standard deviations

	Variable	1	2	3	*M*	*SD*
1	Attitude				3.28	2.00
2	Reflection	.33***			4.68	1.31
3	Challenge	.14*	.45***		5.50	.92
4	Risk	-.33***	.08	.42***	5.16	1.15

*$p < .05$, **$p < .01$, ***$p < .001$.

Taken together, more positive attitudes towards *scrambling*, *aid climbing*, *ice climbing*, and *free soloing* were all related to higher ratings on the Enjoyment components. However, more positive attitudes towards *bouldering*, *traditional climbing*, *sports climbing*, and *deep water soloing* were related to higher ratings on the Challenge components. Lower ratings on the Risk components were related to more positive attitudes to *bouldering*, *traditional climbing*, *ice climbing*, *free soloing*, and *deep water soloing*. Lastly, more positive attitudes towards *deep water soloing* alone were related to higher ratings on the Perspective and Self-Reflection component.

3.5 Discussion

Existing research designed to systematically evaluate the experiences and views of those who participate in mountain climbing has failed to provide a thorough analysis of potential differences in the perceptions climbers have of different types of climbing. The study presented here provides the first quantitative assessment of the characteristics climbers associate with a broad and representative range of types of climbing subsumed within the overarching practice of mountain climbing.

The main principal components analysis revealed a three component structure: *Challenge*, *Risk*, and *Enjoyment*, indicating that a variety of factors contributed to people's perceptions of the different types of climbing studied. That is, both the Challenge and Risk components accounted for highly comparable amounts of variance in perceptions of the different types of climbing, thus highlighting that although risk did feature in people's perceptions of a variety of types of climbing (see Ewert, 1994), so too did characteristics related to challenge (Stebbins, 2005) and, to a lesser extent, enjoyment. Accordingly, the present findings underscore the need to include both perceptions of risk together with additional characteristics, such as challenge and enjoyment, when trying to obtain a comprehensive representation of people's characterisations of different types of mountain climbing.

However, although the main principal components analysis produced a largely coherent three component solution with many of the items clearly loaded on a single component, there were a few items with double loadings that were harder to interpret. For example, the items, '*sense of who they are*', '*excitement*', and '*conflict with personal and work commitments*', all loaded onto both the Challenge and Risk components with highly comparable component scores. Consequently, even though all of these three items loaded higher on the Challenge component and were therefore incorporated within this component, interpretation of these items is rather more ambiguous. Arguably, some of the sample construed these items, and in particular '*sense of who they are*' and '*excitement*', in a different way to the remainder of the sample. In contrast, even though the items '*opportunity to get a different perspective on life*', '*experience of fear*', and '*ineffable quality*' also loaded onto two components, these items posed less of a challenge to interpret due to the marked difference in the different component scores they obtained. That is, each of these items accounted for twice the amount of variance in the Risk components scores compared to that of the Challenge component scores. Overall, further investigation would help clarify the interpretation and consequent organisation of all the items that loaded on more than one component.

Also worth noting is the finding that the item '*enjoyment*' loaded negatively on the Risk component. More specifically, even though the item '*enjoyment*' loaded extremely highly

on the component of the same name, its relatively high negative loading on the Risk component was striking in the absence of any other negative loadings. However, that '*enjoyment*' loaded negatively on the Risk component is less than surprising. Clearly, for many of the sample high levels of risk were associated with low levels of enjoyment, and vice versa. Nevertheless, as with the other items that loaded on more than one component, further research is needed to establish on which factor the '*enjoyment*' item loads most reliably.

As one might expect, certain climbing styles were positioned higher in relation to the Risk component than were others. *Free soloing*, *deep water soloing*, *ice climbing*, *traditional climbing*, and *scrambling* were all more strongly associated with Risk than were *aid climbing*, *bouldering*, and *sports climbing*. That these particular types of climbing are more strongly associated with Risk is not necessarily surprising given that both *free soloing* and *deep water soloing* prohibit both the use of protection and the aid of a climbing partner. Similarly, although both *traditional climbing* and *ice climbing* permit the use of protection and the aid of a partner, they present activities where participants are more likely to encounter risky situations due to the demands of route finding and placement of protection associated with the former, and the more severe weather conditions associated with the latter. In its more demanding forms, s*crambling* also presents a potentially risky type of climbing, especially given that most scrambling routes are performed unprotected. Therefore, when such limited use of protection is considered it is possible to appreciate why *scrambling* was more strongly associated with Risk than were some of the other types of climbing.

Conversely, the types of climbing that were rated relatively low on the Risk component include, *aid climbing*, *sports climbing*, and *bouldering*. As these types of climbing either allow climbers to rely on pre-placed protection, actually use protection to ascend a route, or take place on relatively low elevations, this is as might be expected. Together the results support the limited research that has compared traditional climbing with sports climbing (e.g., Heywood, 1994), suggesting that, of the two, traditional climbing is more closely associated with risk than is sports climbing. More generally, the results reported here are

consistent with the idea that certain types of climbing are more heavily characterised by risk than others, and that the importance of risk, as perceived by climbers themselves, varies greatly across the different types of climbing (Heywood, 1994). Furthermore, the current study moves beyond existing research by providing a preliminary look at the relevance of risk to the characterisations of several additional and increasingly popular types of climbing (Willig, 2008).

As mentioned earlier, the current findings strongly support existing research that has suggested challenge is a central feature of perceptions and participation in mountain climbing generally (e.g. Mitchell, 1983; Stebbins, 2005). Moreover, the present findings suggest that challenge is predominant in climber's characterisations of the different types of climbing studied. Perhaps not surprisingly, of the types of climbing studied, those that take place on routes with limited exposure (*scrambling*) or allow the active use of protection to ascend a route (*aid climbing*) were not strongly associated with Challenge. In comparison, the remaining six types of climbing were all relatively strongly associated with Challenge. The present findings are somewhat foreseeable as *deep water soloing*, *free climbing*, *ice climbing*, *traditional climbing*, *sports climbing*, and *bouldering* all place significant demands on climbers in various ways, be that the increased pressure associated with being completely self reliant in the absence of protection, the intense physical demands associated with more extreme elements, the need to find a viable route whilst on site, or the athleticism required to pull off extreme moves or cover ground at speed.

Finally, although the Enjoyment component accounted for less of the variance in perceptions of the different types of climbing than did Challenge or Risk, it revealed a startling difference between *aid climbing* and the seven other types of climbing. More specifically, *aid climbing* was rated very low on the Enjoyment component. This, however, could be accounted for by the limited number of participants that reported *aid climbing* as their principal type of climbing. In contrast, *traditional climbing* was positioned relatively high on the Enjoyment component. However, this also is easily explained by the large contingent of climbers within the sample that identified *traditional climbing* as their principal type of climbing. Another type of climbing that was characterised by high levels

of enjoyment was *scrambling*. In general, it makes sense that this arguably less technically demanding and undoubtedly less extreme type of climbing is perceived more in terms of enjoyment than, for example, risk.

Turning to the individual PCAs, a number of similarities and differences were observed between the different types of climbing. All eight types of climbing produced three component solutions. However, there was a degree of variation in the components identified by each principal components analysis, the specific content of each component, and the amount of variance components of the same name accounted for across each type of climbing. Specifically, the analyses for *bouldering*, *traditional climbing*, *sports climbing*, and *deep water soloing* all produced solutions that comprised the following three components: Challenge, Perspective and Self-Reflection, and Risk. In contrast, the solutions produced for *scrambling*, *aid climbing*, *ice climbing* and *free soloing* identified Risk, Perspective and Self-Reflection, and Enjoyment components. Of significance was the finding that a component related to risk was identified in relation to all of the types of climbing. This finding strongly suggests that risk features as some level in climbers' own characterisations of the different types of climbing studied. However, at first glance the absence of a challenge-related component in the solutions produced for specific types of climbing, for instance, *free soloing*, is somewhat surprising. Yet, closer inspection of the results identified the emergence of an interesting pattern. Specifically, certain items that loaded on different components in the overall principal components analysis loaded on a single component for three of the types of climbing, namely: *scrambling*, *aid climbing*, and *free soloing*. That is, items such as '*risk*' and '*challenge*' loaded onto the same component for these types of climbing in the individual PCAs. These findings are of particular relevance to the current study given its interest in identifying for which types of climbing the concept of risk is relevant. Arguably, this reinforces earlier suggestions that for certain types of climbing the notion of risk may represent something qualitatively different to the notion of risk associated with other types of climbing. That is, for certain types of climbing, for example, *sports climbing*, the emergent Risk component comprised items concerning risk, injury, and fear, whereas for other types of climbing, the items featured in the Risk

component included not only these characteristics related to risk but additional items, such as challenge.

Beyond issues pertaining to the interpretation of individual components, a number of differences were observed in the contribution made by different components to overall perceptions of the different types of climbing. Explicitly, certain components accounted for rather more variance in the climbers' perceptions of specific types of climbing and not others. For example, only in the cases of both *scrambling* and *free climbing* did the Risk component account for the largest portion of variance in perceptions of these types of climbing. The Risk component's predominant influence on perceptions of *free climbing* is clearly compatible with the elevated level of danger characteristic of this type of climbing. However, in five out of the eight types of climbing (*bouldering*, *traditional climbing*, *sports climbing*, and *deep water soloing*) Risk accounted for the smallest portion of variance in perceptions. Both the Challenge component and the Perspective and Self-Reflection component each contributed the most to perceptions of three different types of climbing. More specifically, components labelled Challenge accounted for the most amount of variance in perceptions of *bouldering*, *traditional climbing*, and *sports climbing*. This finding fits with the emphasis on challenge often associated with these particular types of climbing, be that working out a bouldering problem, route finding in traditional climbing, or completing a route at speed in sports climbing. In contrast, the Perspective and Self-Reflection component accounted for the greatest amount of variance in perceptions of the remaining three types of climbing: *aid climbing*, *ice climbing*, and *deep water soloing*. However, the significance of this component to these types of climbing is less clear. Perhaps the emphasis on the natural elements in both *ice climbing* and *deep water soloing* is congruent with the focus of the item '*get in touch with the natural environment*' that loaded highly on each of the Perspective and Self-Reflection components identified.

Previous research has provided mixed findings concerning the relationship between perceptions of risk and corresponding risk-related behaviours (e.g., Halpern-Felsher et al., 2001), with more recent research having suggested an alternative approach that highlights the importance of factors other than risk perceptions when trying to unravel people's

participation in risk-related activities (e.g., McKenna & Horswill, 2006). In a similar vein, the current research sought to address which of the emergent characteristic components was significantly related to attitudes towards participation in each type of climbing. For the types of climbing that were located high on the Risk component in the overall principal components analysis, the findings from the individual principal components analyses show that attitudes were significantly associated with Risk for each of these types of climbing. More specifically, for these types of climbing, people with higher Risk component scores held more negative attitudes towards participating in such types of climbing. However, it should be noted that whilst Risk was significantly negatively related to attitudes, in several instances other components, namely Challenge, Enjoyment and Perspective and Self-Reflection, were more strongly related to attitudes. For example, for both *ice climbing* and *free soloing*, the relationship between Enjoyment scores and attitudes was stronger than that between Risk and attitudes towards participation. Similarly, for *traditional climbing*, Challenge scores emerged as more strongly related to attitudes than were Risk scores. Together this pattern of findings contributes to research that has endorsed the view that considering risk perceptions alone fails to fully account for the motives driving people's participation in climbing (e.g., Ewert, 1993, 1994; Macfarlane, 2004). Clearly, although risk perceptions appear to be related to attitudes towards participating in certain types of climbing, in some cases alternative non-risk-related characteristics, such as challenge, enjoyment, and perspective appear to be more strongly associated with such participation.

Nonetheless, the types of climbing located low on the Risk component (namely: *bouldering*, *aid climbing*, and *sports climbing*) displayed mixed relationships between individual Risk component scores and attitudes towards participating in the corresponding types of climbing. Risk ratings for *aid climbing* and *sports climbing* were not related to attitudes towards participating in these types of climbing. However, risk scores for *bouldering* did reveal a slightly significant relationship with attitudes towards participation, with those reporting higher Risk holding more negative attitudes towards participating in *bouldering*. Given the prominence of the Challenge component in the individual principal components analyses for both *bouldering* and *sports climbing*, the results that identified Challenge as the most significant predictor of attitudes towards participating in these

particular types of climbing were somewhat expected. Lastly, Enjoyment emerged as the component most strongly related to attitudes towards participation in both *aid climbing* and *scrambling*. Clearly, the relationships between risk, other non-risk-related characteristics associated with climbing, and attitudes towards participating both in types of climbing heavily characterised by risk, and types not defined by risk, need further investigation.

3.5.1 Limitations of the present research

Although the psychometric paradigm experienced a period of unparalleled success within the field of risk research (Siegrist, Keller, & Kiers, 2005), recent years have seen a change of feeling with the original methodology increasingly coming under attack both from Slovic (1993) himself, and others (e.g., Siegrist et al., 2005). Given the nature of the present study, specifically its reliance on the psychometric methodology, a few key limitations to this approach should be acknowledged.

First and foremost, concern has been raised in relation to the potential to infer too much from what is, after all, aggregated data (Langford, Marris, McDonald, Goldstein, Rasbash, & O'Riordan, 1999). That is to say, employing a psychometric approach the data analysed represent mean values for, in the case of risk research, each hazard with respect to each characteristic. Therefore, the reduction of the data results in inevitable generalisation and consequent neglect of any potential individual differences that may exist within the data (Siegrist et al., 2005). However, in an effort to remedy the neglect of individual differences characteristic of conventional psychometric procedures, the present study included additional principal components analyses in order to identify the unique component structures associated with each of the types of climbing (see Gardner & Gould, 1989).

A second cautionary note concerns the ability of the characteristics studied to accurately capture participants' perceptions of the types of climbing studied. That is, although actual climbers provided the characteristics used in this study (thereby increasing the potential validity of the findings), they were different climbers to those actually participating in the study. In view of this, the possibility exists that the characteristics measured here include items that might not have otherwise been reported by this particular sample of climbers (see

Fabrigar, Wegener, MacCallum, & Strahan, 1999; Slovic, 2000). Similarly, the current sample of climbers may have perceived additional characteristics, absent in this study, as relevant to the characterisation of the different types of climbing (see Fabrigar et al., 1999; Slovic, 2000). Moreover, any interpretation of the relevance of risk to particular types of climbing remains highly speculative in the absence of further, in-depth, analysis of the meanings climbers attach to the notion of risk in particular settings. That is, risk might be construed in one way for a particular climber, on a specific type of climb, and in quite a different way for another performing a different type of route. In fact, the potential for risk to be construed in very different ways is clearly illustrated by the almost equal loading of the item *excitement* on both the Challenge component and the Risk component in the overall principal components analysis. Arguably, for some people risk presents itself as something to be minimised, feelings of fear accompanying the experience of risk. However, for others the possibility exists that risk is perceived as something more thrilling and exciting, something desired and not always avoided. Importantly, the same holds true for the notion of challenge, enjoyment, and perspective. That is, the analyses presented here do not address issues concerning the interpretation of such characteristics, and how this may differ across both the sample and the types of climbing.

Lastly, the imbalance in the number of climbers identifying each type of climbing as their principal type of climbing prohibits generalizing the present findings to climbing populations generally, other than perhaps those participating in traditional climbing. Moreover, given the profile of the sample presented here (*scrambling*, $n = 9$; *bouldering*, $n = 32$; *aid climbing*, $n = 2$; *traditional climbing*, $n = 100$; *sports climbing*, $n = 27$; *winter climbing*, $n = 1$; *free soloing*, $n = 0$; *deep water soloing*, $n = 0$), together with the antagonism between those advocating traditional principles and those supporting aided approaches (Kiewa, 2001), it is hardly remarkable that *traditional climbing* is considered the most enjoyable by this particular sample of climbers. Clearly, to gain a more balanced view of the relationship between different characteristics and the types of climbing, a sample comprising similar numbers of climbers participating in each type of climbing studied is required.

3.5.2 Future research directions

The present study provides some preliminary findings regarding the varied characterisations of different types of climbing. Thus, the results provide a thought provoking base from which research into this domain can develop. For instance, given the popular view of climbing as a risk-related activity participated in by thrill-seekers (Stebbins, 2005), and the mixed results from research designed to assess the influence of risk on people's participation (e.g., Ewert, 1994; Lyng, 2005), the current study has the potential to aid such avenues by indicating which particular types of climbing may be more heavily characterised by risk, and so more relevant to future work aimed at unveiling how exactly risk operates in people's perceptions of climbing, and their climbing behaviour.

In a similar vein, although beyond the main focus of the present study, future work into different types of climbing would do well to extend the level of analysis to include actual behaviour (see Slovic, 2000). Moreover, considering both the current interest in the relevance of risk to climbing behaviour, together with existing research that reveals a rather mixed relationship between perceived risk and risk behaviour (see Van der Pligt, 1998, for a review), it would be interesting to assess the relationship between attitudes towards climbing and, climbing intentions and behaviour, paying particular attention to the relationship between beliefs about risk and overall attitudes.

Taken together, the findings presented herein further bolster arguments that suggest the inclusion of both positive and negative beliefs and attributes in research designed to provide a comprehensive account of people's perceptions of, and participation in, activities characterised, in part, by an element of risk (McKenna & Horswill, 2006). Moreover, the current study highlights the importance of evaluating possible differences between behaviours that are often classed as the same broad category of behaviour yet, once examined further, reveal a number of potentially important distinguishing features. Overall, the present study highlights a number of important issues not only relevant to research into mountain climbing, or similarly adventurous outdoor pursuits, but to a whole host of health and social behaviours, generally.

3.6 Summary

Taken together, the findings presented in Study 2 indicated that a number of factors contributed to people's perceptions of the different types of climbing. More specifically, the overall principal components analysis identified three characteristic components: Challenge, Risk, and Enjoyment. A great many differences were observed in relation to the eight types of climbing with respect each of the three characteristic components. However, it was particularly enlightening that particular types of climbing (viz. *traditional climbing*, *ice climbing*, *free soloing*, and *deep water soloing*) were positioned higher than others on the Risk dimension. Essentially, the identification of specific types of climbing characterised by higher levels of risk helped facilitate the refinement of the focus of the next study, and of the thesis as a whole. That is to say, due to the thesis's interest in the role and motivational influence of risk on participation in mountain climbing, the types of climbing characterised by higher levels of risk in this study provided the behaviour focused on in Study 3. It was hoped that by concentrating on these specific types of climbing, the relationship between risk and alternative motivations for participating in these particular types of climbing would become clearer.

It is worth noting that only three of the four types of climbing characterised by higher levels of risk (namely, *traditional climbing*, *winter climbing*, and *free soloing)* were included in Study 3. The decision to concentrate on these types of climbing and not on *deep water soloing* was largely down to the small number of accessible climbers actively engaged in *deep water soloing*. Also, following the advice of a number of climbers, the category *ice climbing* was replaced with *winter climbing* not only on the grounds that *ice climbing* represents one aspect of *winter climbing*, but also as a means to increase the likelihood that sufficient participants were recruited.

CHAPTER 4

Study 3: Risk as a value in itself or as a means to other valued states: a means-end chain approach to understanding climbers' motivations for participating in three types of climbing.

4.1 Abstract

Existing research into the motivations underlying participation in mountain climbing, which has specifically addressed the role of risk, has reported mixed findings concerning the importance of risk as a motivation (Ewert, 1994; McIntyre, 1991). Moreover, research of this kind is characterised by an approach that typically attempts to discover how much importance is placed on different categories of motivations (e.g., Ewert, 1993, 1994). In an effort to move beyond this rather simplistic approach, the present study (N = 205) employed means-end chain analysis (Reynolds & Gutman, 1988) to investigate the structural organisation of motivations reported for three types of mountain climbing: *traditional climbing*, *winter climbing*, and *free soloing*. Cognitive maps illustrating the hierarchical organisation of motivations were created for each type of climbing, together with a number of indices that functioned as additional markers of the relevance and importance of each motivation. Importantly, risk was reported as a motivation by all three groups; however, the relative importance of risk *per se*, and in relation to other motivations, was modest. In contrast, *psychological well-being* appeared to be a primary motivation, as was *escape* and *environment.* Limitations of the present study and suggestions for future research are discussed.

4.2 Introduction

> *"Without danger of death, climbing is no longer climbing. I'm not seeking death on the climb – exactly the opposite – I'm trying to survive. But it's very easy to survive if there's no danger of death. Climbing is the art of surviving in very difficult situations that involve the danger of death."*

This excerpt from an interview with Reinhold Messner, the legendary climber from South Tyrol who was the first person to climb all fourteen 8000 metre peaks in the world, clearly

illustrates the mixed feelings that climbers have towards the danger associated with their chosen pursuit (cited in O'Connell, 1993, p.22). Although danger is portrayed by Messner, and numerous other climbers (see O'Connell, 1993 for a selection of interviews with esteemed climbers), as essential to the climbing experience, what is equally apparent is that climbers do not take risks or seek out dangerous situations for the sole purpose of experiencing danger *per se*. With respect to the passage above, Messner's persistent use of the word 'survive' implies, perhaps, that the danger characteristic of climbing is perceived as a desirable opposing force necessary to the occurrence of a positive and fulfilling experience. That is, that the danger involved is something to be reckoned with that may provide a marker against which it is possible to measure achievement, or even that danger presents itself as a catalyst of sorts, something that needs to be overcome or managed in order to experience other states of value. Moreover, accounts such as Messner's suggest that adding an element of struggle enhances further the value already placed on goals one is striving to attain. Clearly, the motivational impetus related specifically to the risk element of mountain climbing is complex. To date, research focused on the relevance and importance of risk to participation in mountain climbing has provided mixed findings, with risk deemed both necessary and unrelated to positive climbing experiences in arguably equal measures (see Ewert, 1994; McIntyre, 1991). Examples of relevant research together with consideration of methodological issues related to such research are discussed below.

4.2.1 Motivations for mountain climbing

A limited body of psychological research specifically designed to identify the motivations for mountain climbing exists, with only a modest portion of this corpus having examined the motivational importance of risk (e.g., Ewert, 1994; McIntyre, 1991). Some of the motivations previously identified as motivations for mountain climbing include: excitement, 'flow' experiences, friendship, image, escape, physical setting, problem solving, achievement, and competence, (e.g., Csikzentmihalyi, 1975; Ewert, 1994; McIntyre, 1991; Mitchell, 1983). However, of the studies that have considered the motivations associated with mountain climbing, none have comprehensively addressed the structural organisation of such motives. That is, research of this kind has typically focused on the reduction of numerous motivations into a smaller set of motivation categories, often

paying additional attention to potential differences in the motivations included in such categories for different groups of climbers (e.g., Ewert, 1994), and the analysis of the importance placed on different motivations depending on level of climbing experience (Ewert, 1993) or degree of involvement in mountain climbing (McIntyre, 1991). Importantly, research concerned with the motivations for participating in mountain climbing appears to have overlooked the relationships between the motivations themselves. For this reason, the primary objective of this study is to provide a more comprehensive account of the organisation of, and relationships between, motivations reported for mountain climbing.

First, it is worth briefly considering why procedures commonly employed to explain the motivational basis to mountain climbing fail to provide a truly meaningful explanation as to why people engage in this pursuit. As mentioned earlier, the reduction of large numbers of motivations into a condensed set of motivation categories using principal components analysis (PCA) is common practice in research designed to explore the motivations for this behaviour (e.g., Ewert, 1994). Although this approach makes data easier to manage and therefore may aid interpretation, it is at best a form of data reduction providing little in the way of explanation as to how exactly such motivations operate as the driving force behind behaviour (see Costello & Osborne, 2005; Gorsuch, 1990). What is more, research of this kind offers little insight into how such motivations relate to one another. Furthermore, although PCA is a popular method employed to analyse the amount of variance accounted for by individual emergent motivations categories, due to the inability of PCA to discriminate between shared and unique variance, its ability to ascertain such levels of variance accurately is questionable (Gorsuch, 1997). Crucially, the overall validity of any results obtained from PCA is dependent on good judgement with regards to which motivations to explore (Fabrigar, Wegener, MacCallum, & Strahan, 1999). That is, if salient motivations are overlooked or irrelevant ones included, then the emergent components have the potential to be both misleading and incomplete.

Therefore, although the identification of key motivations for mountain climbing provides some insight into participation in this behaviour, this fails to provide a comprehensive

representation of the organisation of, and relationships between, such motivations. Given the restricted value of the analytical approaches that have dominated quantitative research into this activity to date, and borrowing from research into the motivational basis of other behaviours (e.g., Bagozzi, Bergami, & Leone, 2003; Pieters, Baumgartner, & Allen, 1995), a means-end chain approach is employed in the present study (Gutman, 1982; Reynolds & Gutman, 1988). An outline of the means-end chain methodology together with arguments for its use are presented later.

4.2.2 Risk as added value

Returning to the comments made by Messner (O'Connell, 1993), the element of danger associated with mountain climbing is portrayed as both a necessary and desired force to battle against, and something which enhances the value of any resultant goals attained. Recent work by Higgins (2006) has explored the notion that opposition, or more generally 'difficulty', can be viewed as a source of value (Lewin, 1935). In this case, the term difficulty was used in a broad sense and encompassed physical barriers, prohibition, and complexity (Lewin, 1935, 1951). Higgins (2006) went on to develop a novel way of describing the effects of difficulty on value by exploring, amongst other things, the relationship between 'strength of engagement', 'motivational force', and value. Although Higgins (2006) outlined four sources of engagement strength, only one is strictly relevant to the focus of this paper, namely, opposition to interfering forces. Even though the exact nature of the relationship between such opposition and strength of engagement is complex, in its simplest form it is hypothesised that when individuals attempt to overcome an opposing force that is a difficulty of one sort or another, strength of engagement increases. In turn, increases in strength of engagement increase motivational force, thus enhancing the overall value (positive or negative) attached to the desired end state or states being worked towards (Higgins, 2006).

Given the aforementioned complexities surrounding mountain climbers' apparent desire to engage with risk whilst simultaneously wanting to ensure their survival, perhaps the suggestions made by Higgins (2006) offer a perspective that has the potential to inform the exploration of the motivational basis of climbing, specifically in relation to the role of risk.

That is to say, although climbers may not be motivated by, or value, risk by itself, perhaps risk operates in a way that adds to the value already associated with other motivating factors, or indeed simply facilitates the accomplishment of such valued motivations. Accordingly, it is possible to argue that existing research that has investigated the significance of risk as a motivation by simply identifying differences in the importance placed on risk for various groups (e.g., Ewert, 1994; McIntyre, 1991), has failed to capture the rather more intertwined and complex relationship risk has with other motivations to participate in this pursuit. Consequently, by neglecting to address the interrelatedness of motivations for mountain climbing, past research has failed to account for the potential value climbers attached to certain motivations when considered in conjunction with other motivations, and thus this activity.

4.2.3 Risk as edgework

The notion that risk, and more generally, an element of difficulty or struggle, is necessary to the accomplishment of valued experiences shares a degree of similarity with the social psychological concept of *edgework* (Lyng, 1990). Edgework refers to any voluntary behaviour that is characterised by the need to manage the boundary between chaos and order (Lyng, 1990). That is, the negotiation of the boundary between order and disorder, and in the most extreme cases, life and death, is central to the concept of edgework. Lyng's (1990) original paper on edgework provided a full account of what constitutes an edgework experience and, in so doing highlighted three main dimensions to edgework experiences: *edgework activities*, *edgework skills*, and *edgework sensations.* Taking each in turn, *edgework activities* include activities that "involve a clearly observable threat to one's physical or mental well-being or one's sense of an ordered existence" (Lyng, 1990, p.857). *Edgework skills*, however, usually refer to the ability of those participating in edgework activities to maintain focus on the activity in hand even when experiencing high levels of fear. Lastly, *edgework sensations* comprise, in various combinations: a high degree of focus on details specific to the successful completion of the chosen activity; a sense of control over and unity with the object of, or environment in which the activity is taking place; a heightened sense of reality with the activity resulting in experiences that are described as more 'real' than those encountered in everyday life; and feelings of exhilaration and

omnipotence once the fear characteristically associated with the performance of *edgework activities* is controlled and the task mastered. Together, these feelings tend to result in a sense of self-actualization, something that appears to be a common feature unifying experiences of edgework from a diversity of domains (Lyng, 1990).

Importantly, Lyng (1990) was keen to draw a clear distinction between pure thrill seeking and chance activities, such as gambling, and those characterised by risks that are arguably possible to manage when equipped with the relevant skills. Clearly, like the aforementioned idea that difficulty has the potential to magnify the value attached to a goal achieved (Higgins, 2006), edgework rests on the premise that the act, itself, of negotiating the 'edge', that is, the boundary between life and death, is essential to the experiential rewards associated with such activities. Accordingly, edgework provides another informative theoretical perspective when considering what role risk plays in people's motivations for mountain climbing. A description of the methodological approach employed in the present study follows, highlighting how this approach may facilitate the exploration of the importance of risk as a motivation for mountain climbing together with its position and relationship with other motivations.

4.2.4 Means-end chain analysis and laddering

Means-end chain theory was originally designed as a method for modelling people's thoughts about products and personal values as a way to understand consumer decision-making and behaviour (Gutman, 1982; 1997; Reynolds & Gutman, 1988). According to means-end chain theory, people's thoughts are organised hierarchically in a three-tiered system (Reynolds, Gengler, & Howard, 1995). Positioned at the bottom of the hierarchy are attributes. In the theory's original usage, attributes represent the 'means' in the 'means-end chain' and relate to concrete information about a product or service; for example, one might differentiate between walking boots based on whether they are waterproof, waterproof being the attribute. The intermediate tier of the hierarchy represents the consequences associated with different attributes. Developing the above example, a possible consequence of selecting a waterproof boot may be the ability to walk for longer and thus complete an extended route. The final tier of the hierarchy relates to values which represent the 'ends'

part of the 'means-end chain', with consequences functioning in such a way as to satisfy and reinforce such values. To complete the example above, the previously stated consequences of being able to walk for longer and complete a route may result in feelings of satisfaction, with satisfaction representing the abstract value positioned at the end of the hierarchical chain.

Means-end chain theory has been extensively applied to both consumer research from where it originates (e.g., Claeys, Swinnen, & Abeele, 1995; Gutman, 1997; Pieters, Baumgartner, Allen, 1995; Walker & Olson, 1991) and beyond (e.g., Bagozzi & Dabholkar, 1994; Capozza, Falvo, Robusto, & Orlando, 2003; Radder & Bech-Larsen, 2008). Moreover, means-end chain theory relies on the implementation of laddering techniques (e.g., Reynolds & Gutman, 1988). Specifically, participants are encouraged to report sequences of attributes, consequences and values, otherwise known as ladders, in response to the repeated questioning as to why such an attribute, consequence or value is important to them. Following this, individual ladders are aggregated across the sample and provide the basis for the construction of a hierarchical value map based on the means-end chains identified (Reynolds & Gutman, 1988; see the *Results* section for a full account of this procedure). The 'chains' refer to the sequences identified as a result of aggregating individual ladders. Over the years, this procedure has been adapted to suit the needs of research designed to investigate the hierarchical organisation of goals and motivations (e.g., Pieters et al., 1995). The techniques employed are essentially the same; however probing overlooks the concrete level of information related to attributes and begins at the intermediate level, the level at which people usually identify focal goals. It is argued that by focusing on goals above this intermediate level it is possible to uncover the motivational basis to such focal goals (Pieters et al., 1995).

The value of the means-end chain theory to the current investigation into people's motivations for mountain climbing, and motivation generally, is twofold. First, by employing an idiographic approach to the identification of relevant motivations it is possible to ensure the inclusion of motivations that are truly salient to the particular sample of climbers studied. This individual-level approach stands in contrast to alternative

procedures often employed in motivation research, for example, the rating of researcher-selected lists of motivations (Bagozzi et al., 2003). Clearly, research that has adopted the latter of these methodological procedures is open to criticism concerning the possibility that items considered relevant by the sample have been omitted by the researcher. Second, in adopting the sequential approach characteristic of means-end chain theory to the study of motivations it is possible to identify specific linkages between different motivations. To be more precise, research employing the laddering procedure associated with means-end chain theory has the capacity not only to identify individual motivations but also to ascertain which particular motivations feed into other specified motivations. For example, an application of the means-end chain approach has the capability to both identify risk, challenge and achievement as discrete motivations for mountain climbing, and also reveal that a climber is motivated by risk because this provides the climber with a challenge, which in turn has the potential to give the climber a feeling of achievement. Some have argued that it is the linkages between different motivations that should be focused on, as it is the linkages themselves that reveal the truly meaningful information concerning people's choices, motivations and therefore behaviours (Reynolds et al., 1995; Voss et al., 2007). Accordingly, means-end chain theory is capable of moving beyond other popular practices in motivation research, for example, subjective expected-utility approaches (e.g., Ajzen & Fishbein, 1980), where motivations are dealt with in an additive as opposed to an integrated manner. Clearly, by employing such an approach the present study facilitates the exploration of potential relationships between risk and other motivations.

Although the merits of means-end chain theory are persuasive, attention should also be given to two potential flaws related to the application of this theory. Firstly, the cognitive maps that are created as a means to create a summary representation of all the individual ladders of motivations should be interpreted with care. Essentially, the aggregation of the individual responses has the potential to produce artificial long sequences of motivations. A hypothetical example is now presented to illustrate this point: if some participants reported risk followed by challenge as their motivations for climbing, and different participants reported challenge followed by achievement followed by self-esteem as their motivations for climbing, it is easy to see that when these findings are amalgamated the motivation

chain would be depicted as risk leading to challenge leading to achievement leading to self-esteem, which is not the case for any particular participant. For the same reason, reciprocal and feedback relationships between motivations should also be interpreted with caution. A second concern relates to the validity of the individual motivation ladders reported by participants. More specifically, suggestions have been made that procedures that force participants to reported lengthy sequences of motivations, although producing interesting data, may not capture the true nature of people's motivations as they would be reported freely. Essentially, in a bid to complete the research task, participants arguably search for motivations to report beyond those that they would ordinarily occur to them. Issues related to the benefits and flaws associated with means-end chain theory are returned to later in the discussion.

4.2.5 The present study

The primary objective of this study was to identify the structural organisation of motivations reported for three types of mountain climbing: *traditional climbing*, *winter climbing*, and *free soloing*. These types of climbing represent variants of this pursuit that are often characterised by higher levels of risk (see Heywood, 1994; O'Connell, 1993), something that is of principal interest to the present study. Moreover, in an attempt to build upon the results presented in Chapter 3 concerning the characterisation of different types of climbing, *traditional climbing*, *winter climbing*, and *free soloing* were selected based on their relatively high position on the emergent Risk component. Important to note is the replacement of the label *ice climbing* with the different label *winter climbing*. The decision to change this label was based on the feedback provided by several participants in study two who suggested *winter climbing* was a more inclusive label than *ice climbing*, and that by definition incorporated within it not only *ice climbing* but also climbing in winter conditions, generally. Overall, it was felt that by investigating these types of climbing it would not only be possible to identify relationships between different motivations reported for this pursuit, but also would increase the likelihood that risk would be identified as a motivation. In turn, it was hoped that focusing on these particular types of mountain climbing would help facilitate the present study in its bid to explore how risk relates to other motivations, if at all.

4.3 Method

4.3.1 Participants

Participants were 205 climbers (35 women, 170 men) with a mean age of 33.52 years (*SD* = 12.40; range 15 to 74 years). Climbing experience ranged from less than one year to 57 years (*M* = 9.97 years, *SD* = 10.29). Participants were recruited via an internet-based climbing forum, where they were invited to complete a questionnaire concerned with their reasons for climbing. Participation was voluntary and, although individual participants were not paid, participants were informed that a donation of £200 was to be given to the British Mountaineering Council once 200 participants had been recruited and the study was completed.

4.3.2 Materials

An internet-based questionnaire entitled 'Your personal reasons for participating in climbing' (see Appendix 4.1) designed to elicit participants' reasons for participating in one of three specified types of climbing (*traditional climbing*, *winter climbing*, and *free soloing*) was constructed. Brief descriptions of the three types of climbing were provided at the beginning of the questionnaire following demographic questions concerning age and sex. Participants were also asked to indicate which of the three types their principal climbing type was, and report their experience of that type of climbing. Additional items that measured attitudes (Ajzen & Fishbein, 1980) were included. The questions included are described in the following paragraphs (unless otherwise indicated, response scales, indicated in parentheses, were 7-point and fully anchored; items were reverse coded were necessary).

4.3.3 Measures

4.3.3.1 Climbing experience

Experience was reported in response to the following item: "Please indicate how long you have been participating in your principal climbing style ….. years".

4.3.3.2 Elicitation of motives

Participants were presented with a series of fifteen individually labelled boxes (see Appendix 4.1). They were asked to provide five reasons for participating in their principal type of climbing and list them separately in the first five boxes. In the boxes that followed they were asked to indicate why each of the individual reasons they had provided were important to them, and in turn why these reasons were important to them. Overall, participants could report a maximum of fifteen reasons and ten linkages, however if they could not provide this many reasons it was possible to leave boxes empty.

4.3.3.3 Attitudes

Attitudes towards participating in their principal type of climbing were assessed using a semantic differential measure. The measure comprised five items that asked participants to respond to the following statement: "For me, participating in my principal climbing style is…" (*extremely bad* [+1] to *extremely good* [+7]), (*extremely harmful* [+1] to *extremely beneficial* [+7]), (*extremely foolish* [+1] to *extremely wise* [+7]), (*extremely unpleasant* [+1] to *extremely pleasant* [+7]), and (*extremely unenjoyable* [+1] to *extremely enjoyable* [+7]). The mean of the five items was used ($\alpha = .79$).

Participants were also invited to provide any additional information concerning their thoughts and feelings towards participating in climbing.

A number of additional items related to ambivalence and sensation seeking were included, however the items do not feature in the main analyses. The additional items are presented below:

4.3.3.4 Ambivalence.

Using the same structure as Thompson, Zanna, and Griffin (1995) positive and negative evaluations of participant's principal climbing style were assessed via two 5-point items: "For a moment only consider the **positive** things about participating in your principal climbing style. Please rate how positive those positive things are." (*not at all positive* [+1] to *extremely positive* [+5], fully anchored), and "For a moment only consider the **negative**

things about participating in your principal climbing style. Please rate how negative those negative things are." (*not at all negative* [+1] to *extremely negative* [+5], fully anchored). Using these values ambivalence was calculated as follows: first, a difference score was calculated by subtracting the 'negative things' from the 'positive things', this score was then incorporated into the Griffin formula (Thompson et al., 1995) to give the final measure of ambivalence:

$$\text{Ambivalence} = (P + N)/2 - |P - N|$$

Where *P* denotes the positive score and *N* the negative.

An additional measure of ambivalence was included that comprised one item: "I both want **and** do not want to participate in my principal climbing style" (*strongly disagree* [+1] to *strongly agree* [+7]).

4.3.3.5 Sensation seeking

Sensation seeking was assessed using two measures: the BSSS-4 (Stephenson, Hoyle, Palmgreen, & Slater, 2003) and the SS-2index (Slater, 2003). The BSSS-4 measure comprised four 5-point fully anchored items: "I would like to explore strange places" (*strongly disagree* [+1] to *strongly agree* [+5]), "I like to do frightening things" (*strongly disagree* [+1] to *strongly agree* [+5]), "I like new and exciting experiences, even if I have to break the rules" (*strongly disagree* [+1] to *strongly agree* [+5]), and "I prefer friends who are exciting and unpredictable" (*strongly disagree* [+1] to *strongly agree* [+5]). The mean of the four items was used ($\alpha = .63$). The SS-2 measure comprised two 5-point items: "How often do you do dangerous things for fun?" (*not at all* [+1] to *very often* [+5], anchored only endpoints) and "How often do you do exciting things, even if they are dangerous?" (*not at all* [+1] to *very often* [+5], anchored only at endpoints). The mean of the two items was used ($r = .75$, $p < .001$).

4.3.4 Design and procedure

This study was conducted using an internet-based questionnaire. Participants were recruited via a single internet-based climbing forum. A brief statement requesting people's assistance in a climbing-related study together with the questionnaire's web address link were posted on the site and remained there for three weeks.

4.4 Results

4.4.1 Descriptive Analyses

The 205 participants reported a total of 2,343 motivations (throughout this chapter the terms 'reasons' and 'motivations' are used interchangeably) for participating in their principal type of climbing, and 1,370 linkages between motivations, giving a mean of 11.3 motivations and 6.7 linkages per participant. Taking each of the three subsamples in turn: the *traditional climbing* (n = 158) group reported 1,745 (M = 11.0) motivations and 1,064 (M = 6.7) linkages, the *winter climbing* (n = 29) group reported 298 (M = 10.3) motivations and 178 linkages (M = 6.1), and the *free soloing* (n = 18) group reported 201 (M = 11.2) motivations and 128 (M = 7.1) linkages.

Due to the typically idiosyncratic nature of responses it was necessary to conduct a content analysis resulting in the classification of individual motivations into a smaller set of motivation categories (Reynolds & Gutman, 1988). The author together with an independent judge began by content analysing a portion, where possible the responses of twenty participants, of the questionnaires returned by each of the three subsamples that represented the three types of climbing. This stage of analysis resulted in the identification of fifteen broad categories of motivations: 'psychological well-being', 'self-esteem', 'achievement', 'health', 'challenge', 'escape', 'environment', 'focus', 'safety', 'risk', 'fear', 'thrill', 'social', 'identity', and 'ethics' (see Appendix 4.2 for a selection of participants' responses as an illustration of the content and scope subsumed within each category of motivations). It is worth acknowledging that the level of specificity together with some of the nuances exhibited in the motivations reported was 'lost' in this process. However, in order to create parsimonious and coherent cognitive maps for each type of climbing, a certain level of sacrifice with respect to individual and highly nuanced

motivations was deemed necessary. For example, the motivations 'physical challenge' and 'psychological challenge' were subsumed within the category 'challenge'. Judges showed 86% agreement; that is, the judges agreed on the classification of 2,022 motivations out of the total 2,343 reported by participants. Disagreements were subsequently resolved through discussion so that all motivations reported were classified. Importantly, where two or more motivations reported directly after one another were classified as belonging to the same category of motivation they constituted a single occurrence. Additionally, where participants reported the same motivation twice, separated by only one different motivation, only the first instance of the duplicated motivation was counted.

The first stage in the analysis of the structure of motivations for participating in climbing was to construct an implication matrix (Reynolds & Gutman, 1988) for each of the three climbing groups. The implication matrices show the number of times each motivation led to each of the other motivations for all the participants within each of the groups. Tables 4.1 to 4.3 show the implication matrices for the 15 motivations identified in the content analysis for each of the three groups: *traditional climbing*, *winter climbing*, and *free soloing*. Each of the motivations is featured twice, once in the rows and once in the columns, and the numbers in the tables show the frequency with which the motivations listed in the rows led to the motivations listed in the columns. For example, in Table 4.1, 'escape' led to 'psychological well-being' 18 times for the climbers in the *traditional climbing* group.

Table 4.1 Implication matrix for *traditional climbing*

Abstract ratio	Motive	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Out-degrees
0.920	1. Self-esteem		0	0	0	0	0	0	0	0	0	1	0	1	0	0	2
0.803	2. Psychological well-being	4		3	8	1	7	5	0	4	4	1	2	0	3	2	44
0.706	3. Identity	0	5		2	0	0	0	0	0	1	0	0	2	0	0	10
0.600	4. Escape	1	18	1		1	4	1	0	5	0	0	0	0	0	2	33
0.522	5. Risk	0	6	0	1		2	1	3	0	3	2	0	1	1	1	21
0.505	6. Achievement	7	22	1	2	1		5	0	0	1	0	0		2	2	43
0.491	7. Health	2	19	0	3	0	3		0	0	2	0	0	1	1	0	31
0.483	8. Fear	0	2	1	0	3	3	1		0	3	0	0	0	2	0	15
0.448	9. Focus	0	7	0	3	2	1	1	0		0	0	1	0	1	0	16
0.426	10. Thrill	1	11	0	4	0	4	4	3	0		2	0	1	1	0	31
0.412	11. Safety	1	0	0	1	8	0	0	0	0	0		0	0	0	0	10
0.333	12. Ethics	0	4	0	2	2	0	0	0	0	0	0		2	0	6	16
0.179	13. Social	1	23	16	1	1	1	1	0	1	0	1	0		0	0	46
0.144	14. Challenge	6	27	1	1	2	19	6	5	3	4	0	2	1		0	77
0.141	15. Environment	0	36	1	21	2	0	5	3	0	5	0	3	1	2		79
	In-degrees	23	180	24	49	23	44	30	14	13	23	7	8	10	13	13	474

Table 4.2 Implication matrix for *winter climbing*

Abstract ratio	Motive	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Out-degrees
1.000	1. Identity		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.857	2. Psychological well-being	0		1	1	0	0	0	0	0	0	1	0	2	1	0	6
0.688	3. Self-esteem	1	1		0	0	1	0	0	2	0	0	0	0	0	0	5
0.591	4. Thrill	0	1	0		0	0	0	0	0	0	0	0	0	0	0	1
0.625	5. Escape	0	6	2	0		0	0	0	1	0	0	0	0	0	0	9
0.500	6. Social	1	0	1	0	1		0	0	0	0	0	0	0	0	0	3
0.500	7. Focus	0	3	0	0	2	0		0	1	0	0	0	0	0	0	6
0.500	8. Safety	0	0	0	0	0	0	0		1	0	0	0	0	0	0	1
0.444	9. Achievement	0	2	2	0	0	1	0	0		0	0	0	0	0	0	5
0.357	10. Health	0	3	2	0	0	0	0	0	2		0	0	1	0	0	8
0.333	11. Fear	0	1	1	0	0	0	1	0	1	0		0	1	0	0	5
0.333	12. Risk	0	2	0	0	0	0	0	0	0	0	0		0	0	0	2
0.231	13. Challenge	0	4	2	1	1	0	4	0	0	3	1	1		0	0	17
0.074	14. Environment	0	14	0	0	5	0	0	0	0	1	1	0	2		0	23
0.000	15. Ethics	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
	In-degrees	2	36	11	2	9	2	5	0	8	4	3	1	6	1	0	90

Table 4.3 Implication matrix for *free soloing*

Abstract ratio	Motive	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Out-degrees
1.000	1. Social		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.714	2. Self-esteem	0		0	0	0	0	0	2	0	0	0	0	0	0	0	2
0.666	3. Identity	0	2		0	0	0	0	0	0	0	0	0	0	0	0	2
0.666	4. Health	0	0	0		0	0	0	1	0	0	0	0	0	0	0	1
0.666	5. Risk	0	0	0	0		0	0	0	0	0	0	1	0	0	0	1
0.600	6. Safety	0	0	0	0	0		0	0	1	1	0	0	0	0	0	2
0.551	7. Psychological well-being	0	2	2	2	0	0		1	0	2	1	2	0	1	0	13
0.545	8. Achievement	0	0	1	0	0	0	4		0	0	0	0	0	0	0	5
0.500	9. Fear	0	0	1	0	0	0	0	1		0	0	0	0	0	0	2
0.455	10. Escape	1	0	0	0	1	0	4	0	0		0	0	0	0	0	6
0.333	11. Environment	0	0	0	0	1	0	0	0	0	0		0	1	0	0	2
0.250	12. Focus	0	0	0	0	1	2	3	0	0	2	0		1	0	0	9
0.250	13. Thrill	0	0	0	0	1	0	5	0	0	0	0	0		0	0	6
0.250	14. Challenge	0	0	0	0	0	1	0	1	1	0	0	0	0		0	3
0.000	15. Ethics	0	1	0	0	0	0	0	0	0	0	0	0	0	0		1
	In-degrees	1	5	4	2	4	3	16	6	2	5	1	3	2	1	0	55

Next, three indices used to gauge both the position and importance of individual motivations were calculated: *abstractness*, *prestige*, and *centrality* (Faust & Wasserman, 1992; Knoke & Burt, 1982; Wasserman & Faust, 1994). Each of the indices uses information concerning the *in-degrees* and *out-degrees* of individual motivations. *In-degrees* refer to the frequency with which a motivation is the object or destination in a linkage, aggregated across participants, and is calculated as the column sum of the motivation in the implication matrix. *Out-degrees* refer to the frequency with which a motivation is the source or origin in a linkage, aggregated across participants, and is calculated as the row sum of the motivation in the implication matrix. The calculation and relevance of *abstractness* is outlined in the following paragraphs, together with a graphical representation of the motivational structure for each of the three climbing groups, before returning to report both *prestige* and *centrality* indices.

First, an index of the level of *abstractness* (see Bagozzi & Dabholkar, 1994; Pieters et al., 1995) was calculated for each of the fifteen motivations for each of the three groups. *Abstractness* is calculated as the ratio of *in-degrees* over the sum of *in-degrees* plus *out-degrees*. *Abstractness* reflects the proportion of times a motivation is a destination in a linkage, as opposed to a source, and ranges from 0 to 1 with 1 indicating the highest possible level of *abstractness*. Motivations are arranged in tables 4.1 to 4.3 in ascending order of *abstractness* (see column 1). For the *traditional climbing* group, the most *abstract* motivations are 'self-esteem' and 'psychological well-being', whereas the most *concrete* motivations are 'environment' and 'challenge'. *Abstractness* ratios for the *winter climbing* group show that 'identity' and 'psychological well-being' represent the most *abstract* motivations, while 'ethics' and 'environment' are the most *concrete* motivations for this subsample. For the *free soloing* group, the most *abstract* motivations are 'social' and 'identity', with the most *concrete* motivations being 'ethics' and 'challenge'.

Using the information in the implication matrices, individual graphical representations were mapped out for each of the climbing groups, providing a visual guide to the organisation of the motivations reported by each climbing group. Even though it is possible to build a fully comprehensive map of the structural organisation of participants' motivations by

considering all non-zero cell entries in the implication matrix, this can result in a somewhat overcomplicated map that is hard to digest. Accordingly, in line with other applications of this procedure (e.g., Bagozzi & Edwards, 1998; Pieters et al., 1995), a cut-off level was selected based on its ability to produce a map representing a large proportion of all of the linkages between motivations reported with a relatively small number of cells in the implication matrix. Tables 4.4 to 4.6 present a number of important ratios routinely consulted when selecting the cut-off level (e.g., Bagozzi & Dabholkar, 1994; Pieters et al., 1995). The first column of these tables reports the number of active cells in the implication matrix for cut-off levels 1 through 8, 1 through 6, and 1 through 4 for the *traditional climbing*, *winter climbing*, and *free soloing* groups, respectively. The next column presents the number of active cells as a proportion of all cells for each cut-off level, and the column after this reports the number of active cells as a proportion of all cells mentioned at least once. For instance, for the *traditional climbing* group applying a cut-off level of 3, 49 cells are active, which is 23% of all cells and 43% of all active cells mentioned at least once. The fourth column reports the number of active linkages for each cut-off level, and the last column present the number of linkages as a proportion of all linkages mentioned at least once. For example, for the *traditional climbing* group, applying a cut-off level of 3 again, there are 386 active linkages representing 81% of all linkages mentioned at least once.

Reynolds and Gutman (1988) recommended two procedures for selecting a cut-off level. First, they suggested trying multiple cut-off levels and choosing the one that results in the most informative and comprehensible representation. Second, they proposed referring to the number of linkages accounted for as a proportion of all active linkages at each cut-off level as a guide to selecting the cut-off level that results in the most informative representation. A further two principles to consider when choosing a cut-off level have since been proposed by Pieters et al. (1993). Firstly, they endorsed plotting the number of linkages accounted for at specific cut-off levels and looking for an elbow. Secondly, they advocated comparing the proportion of active cells in the implication matrix to the proportion of all linkages accounted for at different cut-off levels, therefore helping identify at cut-off level at which a parsimonious yet satisfactorily descriptive representation would result

Table 4.4 Statistics on linkages between motives for *traditional climbing* for different cut-off levels

Cut-off	(1) Number of active cells	(2) Number of active cells as a proportion of all cells	(3) Number of active cells as a proportion of all cells mentioned at least once	(4) Number of active linkages	(5) Number of active linkages as a proportion of all linkages mentioned at least once
1	114	0.54	1.00	474	1.00
2	72	0.34	0.63	432	0.91
3	49	0.23	0.43	386	0.81
4	35	0.17	0.31	344	0.73
5	26	0.12	0.23	308	0.65
6	19	0.09	0.17	273	0.58
7	15	0.07	0.13	249	0.53
8	12	0.06	0.11	228	0.48

Table 4.5 Statistics on linkages between motives for *winter climbing* for different cut-off levels

Cut-off	(1) Number of active cells	(2) Number of active cells as a proportion of all cells	(3) Number of active cells as a proportion of all cells mentioned at least once	(4) Number of active linkages	(5) Number of active linkages as a proportion of all linkages mentioned at least once
1	46	0.22	1.00	90	1.00
2	19	0.09	0.41	63	0.70
3	9	0.04	0.20	43	0.48
4	6	0.03	0.13	34	0.38
5	4	0.02	0.09	26	0.29
6	3	0.01	0.07	21	0.23

Table 4.6 Statistics on linkages between motives for *free soloing* for different cut-off levels

Cut-off	(1) Number of active cells	(2) Number of active cells as a proportion of all cells	(3) Number of active cells as a proportion of all cells mentioned at least once	(4) Number of active linkages	(5) Number of active linkages as a proportion of all linkages mentioned at least once
1	34	0.16	1.00	55	1.00
2	13	0.06	0.38	34	0.62
3	4	0.01	0.12	16	0.29
4	3	0.01	0.09	15	0.27

Due to the differences in sample size for each group, and consequently the number of linkages between motivations reported, different cut-off levels were chosen for each group. Cut-off levels of 5, 2 and 2 were selected for the *traditional climbing*, *winter climbing*, and *free soloing* groups, respectively, as this level of inclusion achieved comprehensive yet interpretable maps based upon the criteria outlined above. Using these cut-off levels, maps representing the structural organisation of climbers' motivations to participate in their principal type of climbing were constructing for each of the three groups (see Figures 4.1 to 4.3). The positioning of motivations in the vertical direction represents the motivations degree of *abstractness*, with the most *abstract* goals positioned at the top of the map. The arrow heads indicate the direction of the linkages and the figures next to the arrow heads show the frequency of the corresponding linkage. Inspection of the maps immediately reveals more similarity between the *traditional climbing* and *winter climbing* group, than between either of these groups and the *free soloing* group. Both the *traditional* climbing and *winter climbing* groups are strongly motivated by factors relating to 'challenge' and 'environment', with both 'psychological well-being' and 'self-esteem' representing key superordinate motivations for these groups. However, 'thrill' and 'focus' appear to be major *concrete* motivating factors for the *free soloing* group, with 'self-esteem', 'identity' and 'health' acting as the superordinate motivations for this group. Although 'risk' does not feature in the map for the *free soloing* group, it is positioned on the periphery of the maps for both the *traditional climbing* group and the *winter climbing* group. For the *traditional climbing* group 'risk' appears to operate as a mediator, linking the motivations 'safety' and 'psychological well-being'. However, for the *winter climbing* group 'risk' does not appear to function as a mediator, rather 'risk' is reported as the direct antecedent of 'psychological well-being'.

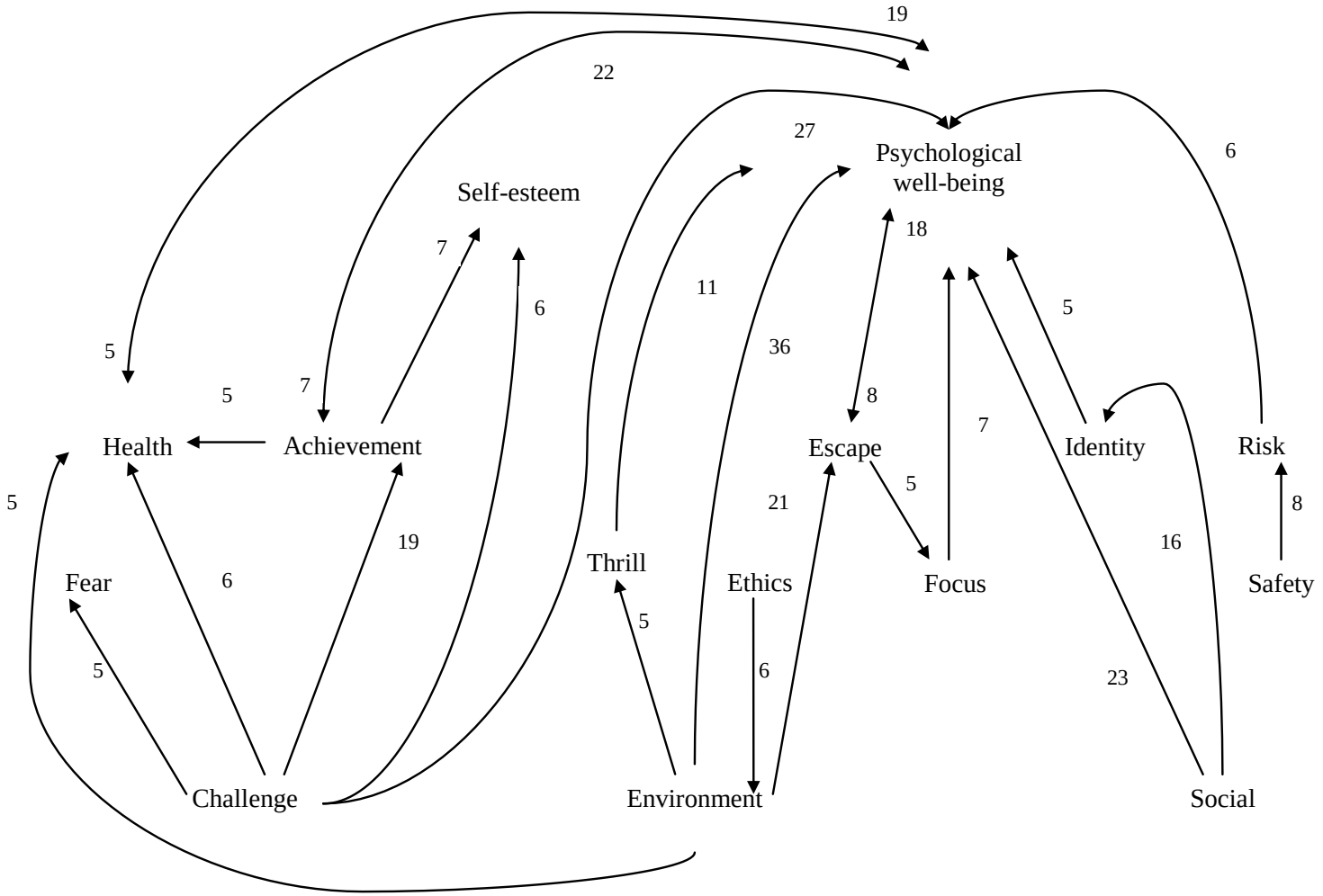


Figure 4.1 Cognitive map of motivations for *traditional climbing* (*n* =158).

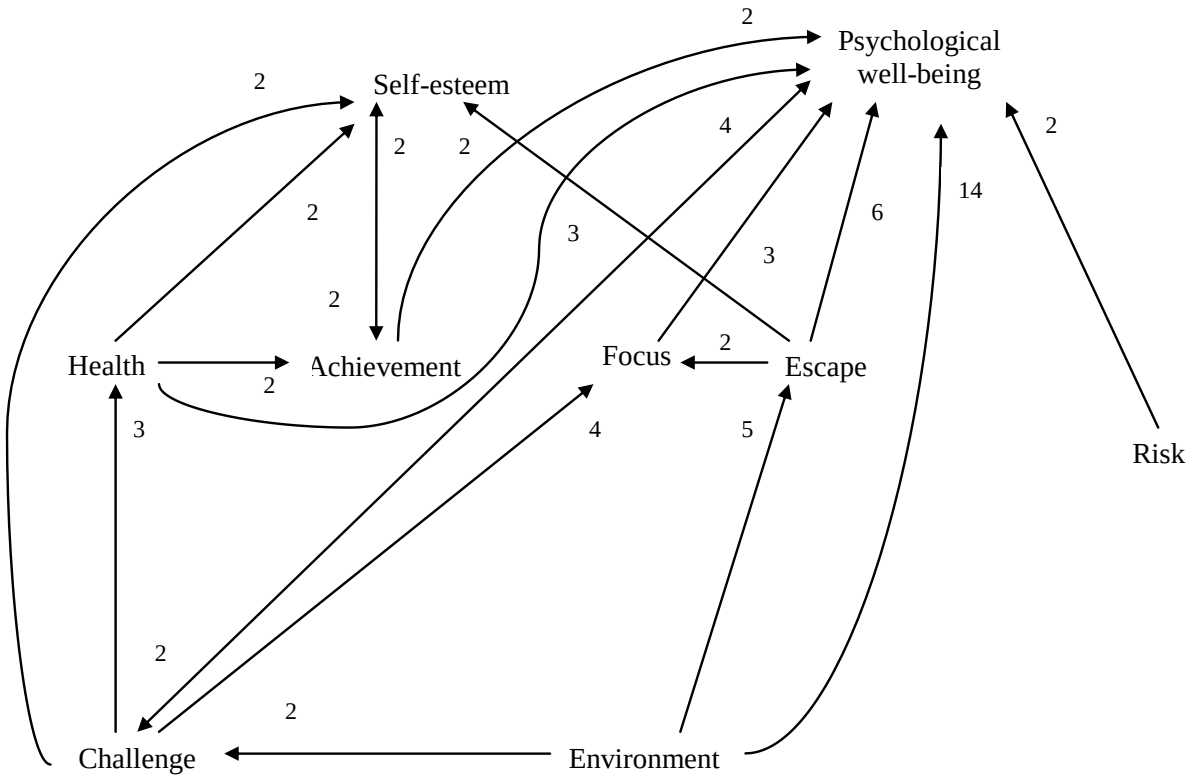


Figure 4.2 Cognitive map of motivations for *winter climbing* (*n* = 29*).*

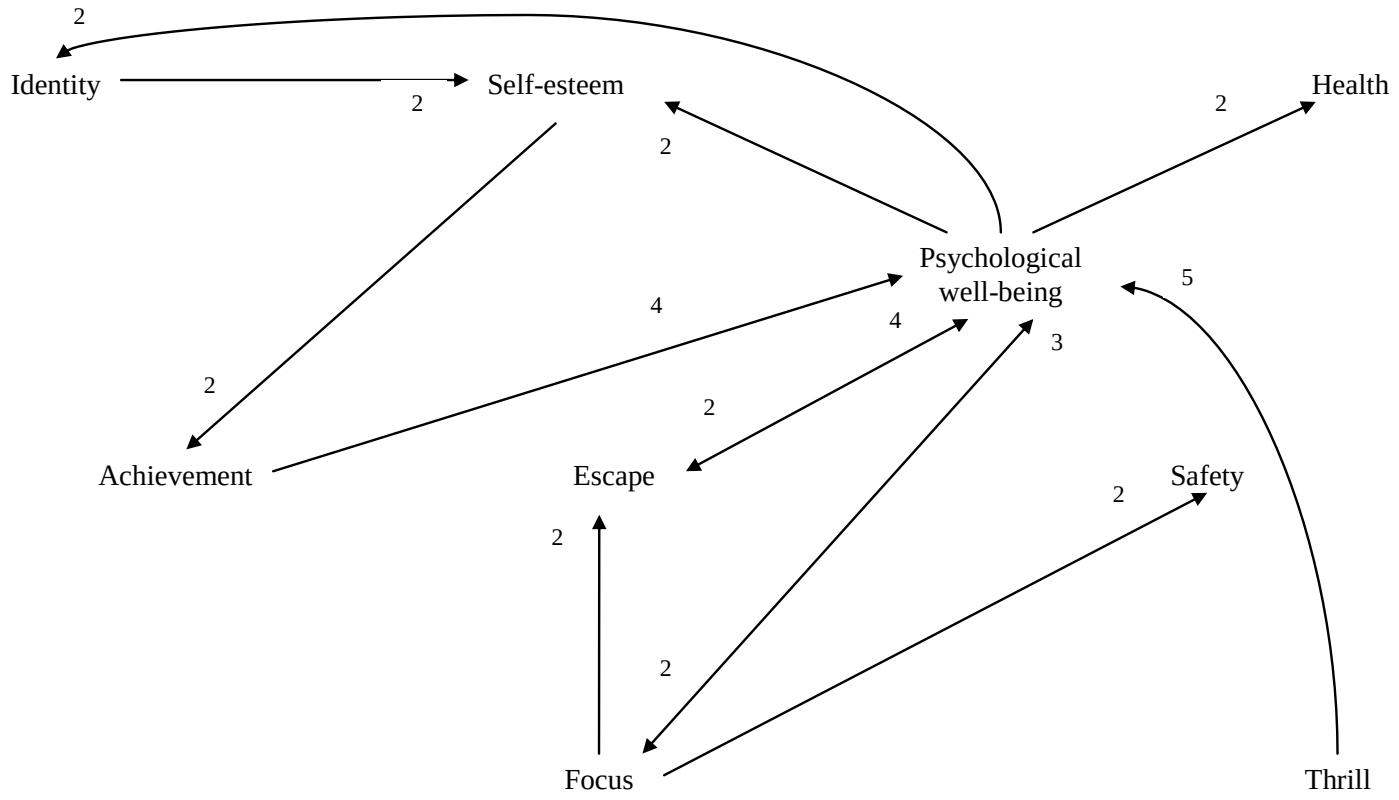


Figure 4.3 Cognitive map of motivations for *free soloing* (*n* = 18).

As a means to examine further the relevance and importance of individual motivations featured in each map, an index of *prestige* of the motivations was calculated (Knock & Burt, 1982). *Prestige* is calculated as the ratio of *in-degrees* of a motivation over the total number of cell entries featured in the implication matrix. *Prestige* indicates the degree to which a motivation is the destination of other motivations; it ranges from 0 to 1, with higher values reflecting more *prestigious* motivations. As shown in Table 4.7, 'psychological well-being' is the most *prestigious* motivation for each of the three climbing groups. 'Escape', 'self-esteem' and 'achievement' represent the next most *prestigious* motivations for the *traditional climbing*, *winter climbing* and *free soloing* groups, respectively.

The final index, *centrality*, was calculated as the ratio of *in-degrees* plus *out-degrees* of a motivation over the total number of cell entries featured in the implication matrix. *Centrality* reflects the proportion of linkages featured in the motivational structure that involve the specified motivation. As with the other indices, *centrality* ranges from 0 (low) to 1 (high). Inspection of Table 4.7 reveals 'psychological well-being' and 'environment' are the most *central* motivations for the *traditional climbing* group. 'Environment' closely followed by 'challenge' represent the most central motivations for the *winter climbing* group. Lastly, 'psychological well-being' is the motivation with the highest degree of *centrality* for the *free soloing* group, followed by 'achievement', 'escape' and 'focus' that score identically in terms of *centrality*.

Table 4.7 Prestige (P) and centrality (C) Indexes

Motives	Group					
	Traditional climbing		Winter climbing		Free Soloing	
	Prestige	Centrality	Prestige	Centrality	Prestige	Centrality
1. Psychological well-being	**0.380**	**0.472**	**0.400**	**0.467**	**0.290**	**0.527**
2. Self-esteem	0.049	0.053	**0.122**	0.178	0.091	0.127
3. Achievement	0.093	0.184	0.089	0.144	**0.109**	**0.200**
4. Health	0.063	0.129	0.044	0.133	0.036	0.054
5. Challenge	0.027	0.190	0.067	0.256	0.018	0.072
6. Escape	**0.103**	0.173	0.100	0.156	0.091	**0.200**
7. Environment	0.027	**0.194**	0.011	**0.267**	0.018	0.055
8. Focus	0.027	0.061	0.056	0.122	0.056	**0.200**
9. Safety	0.015	0.036	0.000	0.011	0.056	0.091
10. Risk	0.049	0.114	0.011	0.033	0.073	0.091
11. Fear	0.030	0.061	0.033	0.089	0.036	0.073
12. Thrill	0.049	0.114	0.022	0.033	0.036	0.145
13. Social	0.021	0.118	0.022	0.056	0.018	0.000
14. Identity	0.051	0.072	0.022	0.022	0.073	0.109
15. Ethics	0.017	0.051	0.000	0.000	0.018	0.036

4.4.2 The relationship between attitudes towards participating in *traditional climbing* and motivations and linkages

Thus far, the results reported have been descriptive in nature and focused solely on the structural organisation of the motivations reported by climbers. As a means to understanding more about the role of motivations and the linkages between such motivations, the relationships between the motivations and linkages and attitudes were explored. Owing to the small sample sizes of both the *winter climbing* and *free soloing* groups, only the *traditional climbing* group were included in the following analyses. Moreover, due to a small number of missing values, the number of participants in the following analyses is slightly less than the number of participants included in the descriptive analyses reported earlier

A series of regression analyses sought to examine the predictive power of both motivations and linkages in relation to attitudes themselves. First, attitudes were regressed on the frequency with which participants reported each of the 15 motivations. Due to the exploratory nature of the analyses and the large number of predictor variables, the motivation items were entered into the regression using a stepwise procedure. Results revealed one significant motivation, 'fear' (R = .17; F [1, 142] = 4.29, p = .040; β = -.17, p = .040). That is, participants who reported 'fear' less frequently held more positive attitudes towards participating in *traditional climbing*. Next, linkages between motivations were entered into a separate stepwise regression. Results revealed one significant linkage, 'achievement – self-esteem' (R = .16; F [1, 142] = 3.96, p = .049; β = -.17, p = .049). Therefore, participants who reported 'achievement' directly followed by 'self-esteem' less frequently held more positive attitudes towards participating in *traditional climbing*. A final hierarchical regression was carried out of attitudes towards participating in *traditional climbing* on the motivation 'fear' (Step 1) and the linkage 'achievement – self-esteem' (Step 2). Overall the model was a significant predictor of attitudes (R = .22; F [1, 141] = 3.67, p = .028). However, the inclusion of the linkage 'achievement – self-esteem' (F_{change} = 2.99, p = .086) failed to significantly add to the amount of variance in attitudes explained by the motivation 'fear' (F_{change} = 4.28, p = .040) (see Table 4.8). Final beta values failed to reveal significant independent predictive effects for either 'fear' (β = -.15, p = .071) or

'achievement – self-esteem' (β = -.14, p = .086; see Table 4.8). Thus, although the figures suggest that participants who held more positive attitudes towards participating in *traditional climbing* reported the motivation 'fear' and linkage 'achievement – self-esteem' less frequently, neither relationship was significant.

Proportional scores were calculated for both the motivations and linkages. These scores were then entered into separate regression analyses identical to those reported above. However, results failed to identify any significant motivations or linkages when proportional scores were used.

Means, standard deviations, and inter-correlations for attitudes, 'fear' and 'achievement – self-esteem' are shown in Table 4.8.

Table 4.8 Hierarchical multiple regression of attitudes towards participating in *traditional climbing* on 'fear' and 'achievement – self-esteem' (n = 144).

(a) Hierarchical multiple regressions of attitudes to participate in traditional climbing

Step	Predictor	R	R^2	Increment to R^2	F_{change}	Final β
1.	Fear	.17	.03	.029	4.29*	-.15
2.	Achievement–self-esteem	.22	.05	.020	2.99	-.14

(b) Correlation coefficients between test variables, means and standard deviations

	Variable	1	2	*M*	*SD*
1.	Attitudes			6.17	0.68
2.	Fear	-.17*		0.08	0.27
3.	Achievement – self-esteem	-.17*	.14*	0.06	0.26

*p< .05.

4.5 Discussion

The two primary objectives of this study were, firstly, to identify the hierarchical organisation of motivations reported for participation in three types of mountain climbing, namely, *traditional climbing*, *winter climbing*, and *free soloing*. Secondly, if risk emerged as a motivation reported for participation in any of the three types of climbing, the present study endeavoured to examine where risk was positioned in relation to other relevant motivations within such motivational structures. Fifteen categories of motivation were identified. Importantly, given the particular focus of the present research, 'risk' was reported as a motivation for participation by all three groups of climbers (see Tables 4.1-4.3). However, it should be noted that even though 'risk' is featured in the cognitive maps for both the *traditional climbing* and *winter climbing* groups, it does not appear in the cognitive map for *free soloing* due to the low frequency with which it was reported (see Figures 4.1- 4.3). Accordingly, at the most basic level, it is possible to assert that risk appeared to bear some relevance to the current sample's motivations to participate in the three types of climbing studied.

As well as identifying discrete motivation categories, a number of linkages between motivation categories were identified. Moreover, this alone validates the supposition that motivations for the three types of mountain climbing studied, like other behaviours (e.g., Bagozzi et al., 2003), can be represented by hierarchical structures featuring chains of connected motivations. As illustration, *traditional* climbers who were motivated by 'challenge' thought that this would result in a sense of 'achievement', which in turn was perceived to lead to 'psychological well-being' (see Figure 4.1).

Two motivational chains were identified that specifically involved 'risk'. However, as mentioned above, 'risk' only features in the cognitive maps created for the *traditional climbing* and *winter climbing* groups. Taking the *traditional climbing* group first, it appears that the relationship between the motivation 'safety' and the motivation 'psychological well-being' is mediated by the motivation 'risk' for this group (see Figure 4.1). Similarly, in part, the cognitive map illustrating the structural organisation of the salient motivations reported by the *winter climbing* group shows that the motivation 'risk'

is directly connected to the motivation 'psychological well-being'. Therefore, at first glance, risk does not appear to be related to many of the other motivations reported by any of the climbing groups.

Two useful indices often employed in network research, namely, *prestige* and *centrality* (e.g., Knoke & Burt, 1982), were calculated to provide additional markers of the importance and relevance of each motivation (see Table 4.7). To recap, the *prestige* index is supposed to indicate how important each motivations is, whilst the *centrality* index is designed to show the degree to which each motivation is related to all other motivations. Importantly, 'risk' scored low on both indices for all three climbing groups, suggesting that risk is less important than other motivations for climbing, and only involved in a small number of motivation chains featured in the cognitive maps. The findings reported here concerning the importance placed on risk as a motivation for climbing mirror some of the existing research (e.g., Ewert, 1993, 1994; McIntyre, 1991). Therefore, it would seem that although risk does appear to form part of people's motivational framework for this activity, the importance of other motivations exceeds that associated with risk. Moreover, although risk does not assume a *prestigious* or *central* position in the motivation chains identified here, crucially, neither is risk positioned at the end of any of the motivation chains. Thus, it seems fair to suggest the current findings provide very tentative support for the idea that risk is not pursued for itself, but perhaps facilitates the achievement of other motivations (Higgins, 2006).

Nevertheless, it is worth briefly commenting on the absence of the motivation 'risk' from the cognitive map created for the free soloists. This finding is somewhat surprising given the characteristically high level of risk associated with this particular type of climbing. Although it is only possible to speculate, the possibility exists that those participating in *free soloing* do not consider their chosen activity as highly risk-related. Moreover, it could be argued that those people who participate in *free soloing* consider themselves to possess the necessary skills to effectively deal with the risks involved in this particular type of climbing (see Csikszentmihalyi, 2000). An alternative explanation relates to this particular group of climbers' actual interpretation of risk. That is, perhaps those participating in *free*

soloing do perceive their activity as risk-related and are motivated by this characteristic, however they may not construe or talk about their activity specifically in terms of risk, but instead view it more in terms of, for example, challenge. One further explanation relates to the possibility that the free soloists deliberately avoided reporting risk as a motivation for their participation in *free soloing*. Arguably, this particular type of climbing's somewhat controversial relationship with risk may have resulted in their omission of risk from the motivations they reported for participation. Clearly, further research into the relationship between risk and motivations for *free soloing* is needed.

Turning to other motivations, 'psychological well-being' scored highly on the *prestige* index for all three climbing groups, suggesting that this may be a particularly salient and valued motivation for climbers, irrespective of their particular type of climbing. However, the frequency with which the climbers reported 'psychological well-being' as a motivation is not unexpected considering the general significance of this factor to numerous volitional behaviours. Importantly, though, it was the *relative* prominence of this motivation that was noteworthy. Additional motivations with relatively high scores on the prestige index include, 'escape', 'self-esteem' and 'achievement' for the *traditional climbing*, *winter climbing*, and *free soloing* groups, respectively. Again, this appears to support some existing research into the motivational basis of mountain climbing which has highlighted the value attached to motivations such as achievement, mastery, and escape (e.g., McIntyre, 1991; Willig, 2008).

The *centrality* index also seems to highlight 'psychological well-being' as a key motivation for all three climbing groups. Moreover, the apparently high proportion of involvement that 'psychological well-being' has when all motivational chains are considered is clearly illustrated in the cognitive maps themselves. Furthermore, closer inspection of the cognitive maps suggests that the high scores achieved by 'psychological well-being' on the *centrality* index for both the *traditional climbing* group and the *free soloing* group are largely down to a number of key, apparently reciprocal, relationships between this motivation and a few others; for example, 'achievement' and 'escape' for the *traditional climbing* group, and 'escape' and 'focus' for the *free soloing* group. Similarly,

'psychological well-being' is *central* to the organisation of motivations reported by the *winter climbing* group with 'environment', 'escape' and 'focus' representing just a few of the motivations that appear to function as antecedents of 'psychological well-being'. Given that none of the existing research into the motivations associated with mountain climbing has considered the relationships between the motivations themselves, the present findings provide a useful base from which relevant research can progress.

Even so, interpretations of the findings presented here should be made with caution. Due to the summary nature of the data upon which the cognitive maps were constructed, the possibility exists that more complex chains involving four motivations, for example, challenge → achievement → health → psychological well-being, reported by the *traditional climbing* group may have questionable validity (see Bagozzi et al., 2003). The same cautionary note applies to both reciprocal relationships and feedback relationships. That is, because the chains featured in the cognitive maps are based upon aggregated data, more robust research designed to confirm such motivation chains is necessary.

Another issue concerns the validity of the individual ladders reported, themselves. It has been suggested that certain laddering procedures that force participants to report extended sequences of reasons, although providing interesting data, do not necessary present an accurate picture of people's naturally occurring thought processes (Grunert & Grunert, 1995; Gutman, 1997; Veludo-de-Oliveira, Ikeda, & Campomar, 2006). Unlike other studies that have employed traditional in-depth interview based laddering techniques, the current study used an on-line questionnaire where it was possible for participants to leave boxes empty, and so terminate their report of reasons where they chose. However, the possibility remains that in wanting to provide a full account of their reasons participants may have reported some unnaturally protracted sequences characterised by dubious validity.

Due to the scope of the content subsumed within single motivation categories driven by the desire to provide a parsimonious yet comprehensive representation of the organisation of motivation (see Appendix 4.2), further research is needed. Such research could be in the

form of interviews that would help clarify which specific aspects subsumed within different motivation categories are connected with each other. For example, does the experience of risk itself lead to feelings of psychological well-being? Or does the management of risk lead to feelings of psychological well-being? Or do both the experience of risk and management of risk lead to feelings of psychological well-being?

Finally, given the very small sample sizes for both the *winter climbing* and *free soloing* groups, it is not possible to make any generalisations about the motivational basis to these two types of climbing. Moreover, the small sample sizes for these groups make it inappropriate to draw any firm conclusions concerning the ability of the present findings to capture the complete motivational basis to these specific types of climbing. That is, the full spectrum of motivations salient to these types of climbing may not have been identified in the current study, and the limited frequency with which linkages between motivations were reported due to the small sample size may have resulted in the underestimation of, or failure to identify, certain important relationships between such salient motivations.

An additional objective of the present study was to explore the relationship between the individual motivations and linkages and attitudes. In much the same way as attitudes are assumed to be a function of peoples' behavioural beliefs and outcome evaluations (Ajzen,1991), the present study hoped to identify which of the motivations and linkages reported best predicted attitudes towards mountain climbing. Due to small sample sizes, the following discussion of the regression analyses is based on the responses of just the *traditional climbing* group. Two separate stepwise regressions were performed, one for motivations and the other for the linkages, before a final hierarchical regression was carried out that entered the motivations in a first step, and then the linkages in a second step. The findings from the stepwise regression analyses showed that only one motivation and one linkage accounted for a significant amount of variance in attitudes, namely, 'fear' and 'achievement' → 'self-esteem'. More specifically, those who held more positive attitudes towards participating in *traditional climbing* reported the motivation 'fear' and linkage 'achievement' → 'self-esteem' less frequently. However, when both 'fear' and

'achievement' → 'self-esteem' were entered into the hierarchical regression analysis, neither emerged as significant in the final model. Overall, it seems plausible to suggest that both the individual motivations and linkages between such motivations failed to account for a significant amount if variance in attitudes due to apparent ceiling effects in the present sample's attitudes. That is, there is very little variance in the attitudes reported by the present sample of climbers with the entire sample reporting very positive attitudes towards participating in climbing. Thus, future research designed to further the current understanding of the relationship between climbers' attitudes and their motivations would benefit from the consideration of such issues before selecting attitude measures. Furthermore, future research would do well to investigate the relationship between motivation linkages involving risk and attitudes as a means to clarify whether risk adds to the value attached to other motivations, reflected by reports of more positive attitudes, or whether risk functions as a facilitator alone (see Higgins, 2006).

Taken together, the findings presented here provide summary representations of the hierarchical organisation of climbers' motivations for participating in three types of climbing, therefore moving beyond existing psychological research into this pursuit. By adopting a means-end approach to the exploration of the motivational basis of this pursuit, the findings provide an integrated and comprehensive account of the reasons for participating in climbing. Moreover, the present research provides a solid foundation from which to develop research into this increasingly popular activity based on the analyses of sequences of motivations reported by climbers themselves.

4.6 Summary

Overall, Study 3 identified fifteen categories of motivation reported for participation in each of the three types of climbing studied, namely, *traditional climbing*, *winter climbing*, and *free soloing*. Crucially, given the focus of the current programme of research, 'risk' was identified as a motivation for participation by all three groups of climbers. However, in comparison to many of the other motivation categories, risk did not assume a prominent position within the motivational chains identified for each of the types of climbing. Importantly, although Study 3 provided some preliminary information on the relationship between different categories of motivations reported for the three types of climbing, a crucial flaw to the means-end chain approach employed concerns the summary nature of the motivation categories identified. Essentially, the means-end chain approach employed resulted in the loss of important information when varied yet broadly related content was subsumed within a single motivation category. Nonetheless, this process of data reduction was deemed necessary, driven by the wish to create a parsimonious yet comprehensive map of motivations. Having considered the limits to Study 3, the following study adopted an interpretative phenomenological analysis approach as a means to explore the role of risk in relation to people's motivations to participate in mountain climbing, with particular attention paid to the meanings people attribute to the risk associated with mountain climbing.

CHAPTER 5

Study 4: Risk: a necessary condition for valued goals? An investigation into the significance and meanings attached to the risks encountered in mountain climbing.

5.1 Abstract

Existing research has portrayed risk as essentially irrelevant to people's motivations for mountain climbing (e.g., Ewert, 1993), a position that stands in stark contrast to popularised images of climbers as people who expressly seek out risk (McNamee, 2007). In response to this mixed state of affairs, the study presented here explored the meanings climbers attribute to the risk inherent to mountain climbing. More specifically, personal accounts (N = 37) of the relevance of risk to subjective motivations for mountain climbing were examined using interpretative phenomenological analysis (Smith, 1996). Importantly, risk appeared to acquire motivational status as a result of its instrumental relationship with, amongst other factors, challenge, focus, escape and identity, factors explicitly labelled as motivations for mountain climbing. Although most of the climbers viewed the risks associated with mountain climbing positively owing to the value it obtained when considered in conjunction with other motivations, there was a small minority of climbers for whom risk was judged explicitly to be an exclusively negative characteristic of mountain climbing. An overall appraisal of the current study is provided, concluding with a recommendation for the adoption of qualitative approaches of this kind to future research into this complex and often misunderstood activity.

5.2 Introduction

> *"And we had talked, as mountaineers always do, about how strange it is to risk yourself for a mountain, but how central to the experience is that risk and the fear it brings with it."*

This extract from Macfarlane's (2003, p. 71) historical and cultural account of mountaineering, *Mountains of the Mind*, encapsulates perfectly the seemingly mystifying relationship mountain climbers have with risk. That is, in a culture increasingly keen to maximise personal safety, and thus minimise people's exposure to risk and the associated

experience of fear (Furedi, 1997), climbers' apparent desire to participate in a pursuit so inextricably connected to risk is considered by many as somewhat baffling (Mitchell, 1983; Waterman, 2002).

5.2.1 Mountain climbing: a misunderstood pursuit

Although mountain climbing has always been inherently risky, over the years technological advances (for example, the development of highly specialised equipment) have contributed to the reduction of certain risks (O'Connell, 1993). However, keeping pace with changes in climbing technologies, some of the types of climbing people engage in today represent a radical departure from those practised in climbing's infancy, with a number of climbers seeking out routes characterised by ever increasing degrees of risk whilst sometimes simultaneously snubbing the use of safety gear. Without doubt, risk assumes a different position in the minds of those who engage in climbing today compared to those who made some of the first ascents in the name of science, when the risks were accepted in order to make scientific discoveries (Macfarlane, 2003). To be more precise, those climbing in the late eighteenth and early nineteenth century accepted the risks out of necessity, whereas at the heart of debates concerning the motivations of today's climbers is the idea that risk represents a welcome part of climbing.

As with most activities, individuals' motivations for climbing - and therefore the specific practices followed - are inevitably varied. Nevertheless, within the climbing community there appears to be a general consensus of opinion that the risk intrinsic to mountain climbing, although complex and sometimes not fully understood by either participants or commentators, is highly valued and not something they would wish to eradicate. To illustrate, consider for a moment the comment made by eminent mountaineer Doug Scott concerning what he perceived as the pivotal significance of risk to climbing:

> "Many mountaineers would concur that facing up to potentially dangerous situations, at all levels of ability, is central to the pursuit of the sport. Without an element of danger lurking around the corner, mountaineering must lose its unique appeal." (cited in O'Connell, 1993, p. 147).

So what is it exactly about risk that is so important to people who engage in mountain climbing? Indeed, popular media images of mountain climbers, and more generally people who participate in 'extreme sports', depict those who pursue these activities as 'thrill junkies', therefore intimating that the direct pursuit of risk is given priority over other motivations (Krein, 2007). However, if one talks to climbers, it is obvious that this is a picture completely at odds with their subjective accounts of the motivations for climbing (O'Connell, 1993). Lay perceptions of climbers' motivations seem to be quite different to those reported by the climbers themselves.

Although revealing an awareness of the popularised view of climbers as people with a 'death wish', Bonatti rejected this characterisation when he remarked:

> "It is to conquer fear that one becomes a climber. The Climber experiences life to its extreme. A climber is not crazy. He is not out to get himself killed. He knows what life is worth. He is in love with living." (cited in Waterman, 2002).

This observation further highlights the complexities regarding the relevance and meanings attributed to risk as it is experienced in mountain climbing. That is, Bonatti's description of the desire to face and overcome fear indicates perhaps a conflict of interests between wanting to meet with an authentic challenge though simultaneously not wanting to experience any grave consequences associated with mishaps. Given the lack of clarity and understanding concerning how mountain climbers perceive and experience the risks inherent to their chosen pursuit, the primary aim of the present study is to fully explore the meanings a sample of active mountain climbers attach to the risks they face when climbing.

5.2.2 A mixed message: is risk a motivation for mountain climbing?

A small amount of contemporary psychological research has examined the motivational basis to 'extreme sports', with only a few studies having focused specifically on mountain climbing. Until very recently, the majority of such mountain climbing-related research has been quantitative, examining the motivational importance attributed to, amongst other

factors, risk (e.g., Delle Fave, Bassi, & Massimini, 2003; Ewert, 1993, 1994). Crucially, however, the findings reported in these studies have suggested that risk plays a minor role in people's overall motivation to participate in mountain climbing. Yet, it is perhaps unsurprising that studies of this kind have failed to positively identify risk as relevant to climbers' motivations. Arguably, a qualitative approach where participants can express their thoughts and feelings in their own terms, and in greater depth, or with greater elaboration, is better suited to the task of discovering how risk is experienced by climbers, and what it means for them motivationally. Nonetheless, regardless of the methodological approaches employed in specific studies, the fact remains that some experiences, feelings and motivations are incredibly hard to articulate. For example, Hinds (in press) examined the psychological rewards of a wilderness experience and identified a number of positive feelings experienced during engagement with the natural environment. However, despite participants' clear articulation of a number of positive characteristic associated with their wilderness experiences, a few deeper emotional experiences remained ineffable and therefore beyond interpretation that relies on analysis of discourse. Perhaps, like some of the deep emotions felt during the wilderness experience studied by Hinds (in press), the subjective meanings climbers attribute to the risks encountered when climbing are so complex so as to render them indefinable. Arguably, a qualitative approach where participants can express their thoughts and feelings in their own terms, and in greater depth, or with greater elaboration, is better suited to the task of discovering how risk is experienced by climbers, and what it means for them motivationally.

A small number of research papers report qualitative studies that have sought to explore the motivations for, and experiences of mountain climbing (e.g., Kiewa, 2001; Lester, 2004; Willig, 2008). Studies of this kind have typically examined participants' verbal and written accounts of their actual climbing experiences in order to identify emerging salient themes (e.g., Willig, 2008). Taken together, the findings presented in these studies highlight a number of factors that appear to represent significant motivations for the climbers involved, including, for example, challenge, mastery, freedom, and escape. Of the themes previously identified in these studies, perhaps those that bear the most relevance to the present study

and its focus on risk are the idea of 'suffering' identified by Willig (2008), and the 'need for self-control within stressful situations' described by Kiewa (2001).

Willig's (2008) analysis revealed that the participants expressed mixed feelings towards both the pain frequently endured as part of climbing and the ever-present danger. More specifically, although participants clearly articulated undesirable feelings towards their experiences of discomfort, pain and injury, they also commented on the necessity of such physical suffering as a means to measure the effort invested in their pursuit. It also appears that to remove the possibility of encountering physical hardship would in turn remove the impetus to master such potentially dangerous situations, and effectively eliminate the challenge that is so central to climbing (Ewert, 1993; Willig, 2008).

Somewhat similarly, Kiewa (2001) described how climbers obtained value through confronting and ultimately controlling 'stressful' situations. A few participants provided vivid descriptions of experiences characterised by acute fear. However, even though these feelings of fear were not perceived as enjoyable in themselves, the opportunity they provided for participants to experience a sense of control over the situation, by working through their fear and managing the risk, was highly valued and often resulted in a sense of exhilaration.

Aspects of both Willig's (2008) and Kiewa's (2001) research described above resonate with Lyng's (1990) theory of edgework. Central to the theory of edgework is the challenge of negotiating boundaries between chaos and order, harm and safety, or, ultimately, life and death (Lyng, 1990). Within his seminal paper, Lyng (1990) highlighted the motivational impetus attached to maintaining control over situations that appear beyond control and, associated with this, the desire to master the skills necessary to proficient engagement in risk-related activities defined as edgework. Clearly, edgework presents a theoretical perspective that has potential to assist in the interpretation of mountain climbers' own accounts of their motivations for participating in this inherently risk-related activity.

Although not specifically related to experiences of mountain climbing, Larkin and Griffiths (2004) also conducted a study that explored the subjective understandings of risk reported by a sample of both recreational drug users and bungee-jumpers. Interview data were subjected to interpretative phenomenological analysis, following which a number of strategies used by the sample to make sense of and rationalise the risks associated with their chosen activities were identified. For instance, some participants talked in terms of 'measured risk' and reported ways in which they managed risk through the implementation of careful and skilled practices (Larkin & Griffiths, 2004). Once more a connection between risk-taking and the opportunity to exert control through the mastery of skills that in turn lead to 'safe' practice is apparent. Arguably, feelings of mastery and control represent a fundamental aspect of people's motivations to participate in risk-related activities.

Taken together, the findings presented above reveal some of the difficulties faced by research designed to decipher the status of risk as a motivation for mountain climbing. By reporting feelings of fear and expressing a lack of desire to sustain serious injury, climbers seem to suggest that the risks inherent to climbing act as a deterrent. Moreover, closer consideration of the accounts provided by climbers reveal that the risks intrinsic to climbing are not positively appraised in isolation (and therefore are not readily labelled as motivations themselves). However, the way in which other motivations appear to acquire meaning in the presence of risk suggests that risk does in fact, consciously or otherwise, operate as a motivation. A brief note concerning the ability of individuals to access their motivations now follows.

There exist longstanding debates concerning the limits to individuals' powers of introspection (see Bortolotti, 2009; Lawlor, 2003; Nisbett & Wilson, 1977; Wilson, Hodges, & LaFleur, 1995). Moreover, research has suggested that people may not be aware of, or may not report all of the thoughts and feelings that have contributed to their decision to act in some way (Nisbett & Wilson, 1977). Accordingly, although not central to the study, issues regarding the stability, accuracy, and accessibility of the motivations reported by the participants are considered.

5.2.3 The present study

In an attempt to obtain a comprehensive account of the relevance of risk to people's motivations for mountain climbing, the current study primarily addressed the meanings climbers ascribed to risk. More specifically, participants were asked to respond to a research question expressly asking them to comment on their perceptions of the relevance of risk to their motivations for participating in mountain climbing. However, in spite of this, due to the open and unconstrained nature of the data collection method, it was thought that any additional motivations perceived as important to participation were also likely to be expressed.

Attention should also be drawn to the nature of the current sample. Participants employed in this study constituted a sub-sample from a previous study (see Study 3, Chapter 4) broadly concerned with motivations for climbing. The current sample was selected on the basis that reference to risk was absent from all responses they gave in the previous study. In view of this, the current study sought to explore the meanings attributed to risk by those participants who previously omitted risk when freely reporting their motivations for mountain climbing. Although not key to the current investigation, such considerations were judged as important given the literature concerning the instability and inaccessibility of reasons given for behaviour (Nisbett & Wilson, 1977; Wilson et al., 1995). That is, it was felt that by using a sample of climbers that had not reported risk as a motivation in the previous study, the current responses might provide the opportunity to compare the content of responses obtained in response to a direct question concerning the relevance of risk to the content of unprompted free responses.

The study presented here employed interpretative phenomenological analysis (IPA, Smith, 1996). Central to IPA are both the *phenomenological* and *interpretative* elements that define this approach. The approach is phenomenological in that it is designed to assist in the elucidation of a comprehensive understanding of how an individual makes sense of their own experiences, and the nature of such subjective experiences (Smith, 1996, 2004; Willig, 2001). However, IPA is also interpretative in that it acknowledges the role of the researcher and all that they bring to the research (Smith, Jarman, & Osborn, 1999; Smith &

Osborn, 2003). More specifically, although the overriding priority of IPA is to get as close as is possible to the thoughts and feelings of the participant as a means to makes sense of their subjective experiences, it simultaneously recognises both the inability of the researcher to 'get inside' the participant's head, and the potential influence of the researcher's own thoughts, feelings and experiences on the resultant interpretation (Smith et al., 1999; Willig, 2001). Given that the primary objective of the present study concerned gaining access to the participating climbers' personal thoughts regarding the relevance of risk to their motivations for climbing, this approach was considered appropriate.

5.3 Method

5.3.1 Participants

Participants were thirty-seven climbers (9 women, 28 men) with a mean age of 39.54 years (range 17 to 67 years). Climbing experience ranged from 1 year to 40 years (M = 13.89 years). Thirty-one of the participants identified *traditional climbing* as their principal type of climbing, with both *sports climbing* and *winter climbing* identified as the principal type of climbing by three participants each. Participants represented a sub-sample taken from a previous internet-based questionnaire study (N = 205; mean age of 33.52 years**,** range 15 to 74 years) in which participants were asked to report their reasons for participating in their principal type of climbing. The participants recruited for the present study were selected on the basis of the content of their responses to a previous study (Study 3, Chapter 4). That is, all participants who did not mention *risk* in their responses to the previous study were invited to participate in the present study. Of the 104 participants approached, 37 (35.58%) responded. All participants were active members of British Mountaineering Council affiliated clubs. Participation was unpaid and voluntary.

5.3.2 Materials

Participants were asked to respond to the following question: "Popular perceptions of climbing suggest those who participate in climbing are motivated, in part, by the risks involved in this activity. Please comment on your thoughts and feelings concerning the importance of risk in relation to YOUR participation in climbing". Participants were also

asked to indicate their age, sex, the principal type of climbing they participated in, and the number of years experience they had of their principal type of climbing.

5.3.3 Procedure

The research question was sent to each participant via electronic mail. Given the number of participants contacted, the potential geographic spread of their places of residence, and the time restrictions of the study, it was deemed appropriate to conduct this study on-line. Participants had provided electronic mail addresses in the previous study expressly for the use as a contact for further mountain climbing-related research. Participants were reassured that they could withdraw from the study at any time, and that all records of electronic mail addresses would be destroyed at the end of the study. In order to preserve participants' anonymity, all excerpts included in the following analysis do not feature any identifying information, except for the participant numbers that are indicated in parenthesis.

Participants' responses ranged from short statements that consisted of approximately three lines of text to more detailed accounts that extended to several pages. The text was analysed via interpretative phenomenological analysis (IPA) (Smith, 1996). Given the modest length of some responses included in the present study, the scope for interpretation is significantly restricted for certain cases.

In accordance with the idiographic approach prescribed by IPA (Smith, Jarman, & Osborn, 1999; Smith, 2004), the initial stage of analysis involved repeated reading of each response in isolation as a means to identify and retain individual nuances featured in the thoughts, subjective meanings and experiences reported in the material. Following this period of thorough familiarisation with the text, each of the responses was re-read in turn, annotated and then coded according to the presence of important emergent themes. Next, both convergences and divergences among participants' responses were noted before the emergent themes were finally organised into super-ordinate, master themes (Smith et al., 1999; Willig, 2001; see Appendix 5.1 for a transcriptions of all responses).

Illustrative quotes from the transcription featured in the following section use the following annotations: *[…]* indicates missing text; numbers in parenthesis indicate the participant number (#1); and non italicised text in parenthesis, for example, (mountain biking), indicates additional information.

5.4 Results

The analysis reported below chiefly relates to climbers' perceptions of the relevance of risk to their participation in mountain climbing, and the subjective meanings they attach to risk within the context of this activity. Accordingly, the present section is organised around the presentation of five salient master themes, and the corresponding subordinate themes subsumed within them (see Table 5.1), that emerged during the analytical process: (i) *Risk as a deterrent*, (ii) *Risk management and associated rewards*, (iii) *'Risk-seeker' identity*, (iv) *Risk and revision of priorities*, and (v) *Non-risk-related motives*. Each theme is now described in turn, drawing on illustrative excerpts from the written responses reported. It should be noted, however, that although particular excerpts have been selected on the basis that they exemplify a specific theme, in some cases, due to the interrelatedness of certain themes, single excerpts are representative in part of multiple themes. In keeping with the IPA approach employed here, the analysis presented is firmly grounded in the responses of the climbers (Smith & Osborn, 2003). Having presented the emergent themes, reflections on the relationships between these themes and parallels with relevant social psychological theoretical perspectives are later suggested in the Discussion.

Table 5.1 Master themes with corresponding emergent subordinate themes.

Risk as a deterrent	Risk management & associated rewards	'Risk-seeker' identity	Risk and revision of priorities	Non-risk-related motives
Avoidance	Challenge	Self-identity	Changes in the relevance of risk	Environmental connection
Fear	Mastery	Dissociation	Process of discovery	Social engagement
	Focus			
	Courage			
	Feelings of escape & alternative perspective			
	Thrill			
	Authentic experience			

5.4.1 Master theme 1: Risk as a deterrent

A minority of climbers expressed unequivocal objection to the idea that risk might play some part in their motivations for mountain climbing, concisely stated in the response of one climber:

> *I am in no way motivated by risk* (#18).

In a similar vein, a few other climbers appeared adamant in their dismissal of the notion that risk might perform a motivational role of sorts:

> *I am not motivated in any way by the risks involved* (#26).
> *I do not consider myself a risk taker at all. In fact the opposite. I avoid risks* (#25).

Clearly, for these climbers the relevance of risk to their personal motivations for mountain climbing is uncomplicated; they firmly asserted risk has no motivational place in their understandings of their participation. Thus, according to these climbers, risk appears to function as a deterrent, or as neutral in motivational terms.

5.4.1.1 Avoidance

Perhaps importantly, even though this handful of climbers provided clear assertions that risk does not drive their participation in any way, they did reveal an awareness and acceptance of the risky nature of their chosen pursuit. That is, although they did not deny the risks inherent to mountain climbing, they were keen to state that they prioritise the elimination of such risks:

> *Whilst there is always a risk with any adventurous activity I think I take all factors into account and risk assess constantly [...] If I feel unable to make one move as consequence of a slip would mean an injury I will not do it [...] I assess my own ability at every step* (#25).

For this particular climber, if they feel safety is not assured then they retreat. In fact, this climber went on to suggest that even though they are confident in their own ability to perform higher level climbs (something they revealed other climbers have also remarked on) they refuse to enter into any situation where they feel out of their 'comfort zone' (#25). Obviously, for these climbers, in situations characterised by a level of risk subjectively perceived as unacceptable, avoidance is favoured as a fail-safe strategy.

5.4.1.2 Fear

An additional feature of some climbers' understandings of their personal aversion to the risk element of mountain climbing concerned their experiences of fear. For a few of the climbers, the fear experienced when they consider the negative outcomes they could experience as a result of entering into risky climbing situations is enough to put them off:

> *I am a cautious person which I think is to do with my personality [...] I have always been a little fearful of getting physically hurt and been aware of my mortality and how easy it is to get seriously damaged!* (#26).

Another climber succinctly expressed similar reservations and a reluctance to engage with climbing endeavours they perceive as risky:

> *Fear keeps me in the lowish grades* (#25).

Therefore, it would seem the prospect of being in a situation where abilities are stretched and thus of exposing oneself to a level of risk that one is not comfortable with, 'to be out of [one's] depth' (#26), is sufficiently emotionally distressing to deter some climbers.

5.4.2 Master theme 2: Risk management and associated rewards

In stark contrast to experiences characterised by the urge to retreat from or avoid climbing situations perceived as risky, the majority of climbers talked about the importance of, and rewards associated with 'risk management'. Unlike those climbers unambiguously deterred by the risk intrinsic to climbing, a large number of climbers appeared to embrace such risk,

experiencing it as an opportunity to positively exert themselves in response to the demands of the activity:

> *Part of the challenge is to tame the risk through strength, cunning and tenacity* (#11).

Evidently, for this climber the risk presents itself as an apparently welcome and motivating challenge, something dealt with by employing both physical and mental skills, and sheer determination.

The idea of 'risk management' was articulated by different climbers in a variety of ways. Common to each, however, was the sense that risk presents itself as something against which diverse valued attributes are tested, often resulting in the experience of various positive states. Put differently, risk, or specifically the management of risk, is understood as necessitating the deployment of assorted skills, and as such provides the demands perceived necessary to stimulate positive, affirming experiences. To give a flavour of the multifaceted nature of this master theme, illustrative examples of each subordinate theme now follow, with due consideration given to the ways in which certain subordinate themes relate to one another.

5.4.2.1 Challenge

The comment above (participant #11) already implies the general significance of the concept of challenge to climbers' understandings of the role risk plays in relation to their personal motivations:

> *I accept the risks involved in climbing and I am motivated by the challenge of managing these risks* (#4).
>
> *Risk, or more specifically managing risk and weighing up whether or not a risk is worth taking, is a big part of climbing for me* (#20).

> *Perhaps part of the challenge in climbing is to do things at the limit of my personal ability, and to do them in such a calculated and managed way that risk is minimized* (#12).

Undoubtedly, central to these and many other accounts provided by the climbers is the recurrent idea that risk symbolizes challenge, which in turn appears to represent the bedrock of many of the climbers' motivations. Further still, and crucial to the climbers' experiences of how the desire to manage such risks motivates them, are the varied means used to meet this challenge. Three such means expressed by the climbers are now presented below.

5.4.2.2 Mastery

The mastery of both physical and mental skills together with relevant techniques is considered by some of the climbers as one way in which they successfully manage the risks presented to them when climbing:

> *Testing yourself in terms of ability, technique, experience against the challenges presented. But knowing the risks in detail and using skill to render these minimalist* (#36).
>
> *A lot of my pleasure in Alpine climbing comes from going into a risky situation and reducing the risk to almost nothing through a combination of speed, technique and experience* (#21).

The sense, shared by several climbers, was that the accomplishment of a degree of proficiency in relevant skills can successfully limit the risk one is exposed to. This is highlighted by the account given by one climber who explicitly referred to mastery:

> *Risk is something to be avoided through mastery. That process is at the heart of climbing; in that sense one is motivated by risk, but it's not roulette* (#1).

With this statement this climber also gave the impression that risk can be categorised into those risks that can be managed with skill and those that are clearly determined by chance. Moreover, this climber appeared keen to clarify that they are not motivated to participate in climbing characterised by uncontrollable risk. It would seem that mastery, and the agency that it implies, is fundamental to this particular climber's understanding of their personal motivations for climbing.

5.4.2.3 Focus

A number of climbers identified another strategy they considered both effective in the management of risk and experientially valuable, namely, focus. One such climber commented:

> *I think that the slight element of danger sharpens the concentration on climbing technique and safety practices and I enjoy the total absorption of senses that climbing encourages […]. Total concentration makes things safer* (#14).

This climber readily expressed a clear view of the functional role focus performs in keeping in check the risks encountered when climbing. It also apparent from this climber's comment that, for them, the risk associated with climbing is clearly perceived as engendering such focused states. For others, the significance of the relationship between risk and focus emerged more gradually, only becoming clear to them when they contemplated their subjective experiences and motivations:

> *In part escapism, as climbing inevitably requires concentration and therefore you cannot help but forget about work/everyday life when leading a route. Yet I suppose without an element of risk then concentration wouldn't be needed so I guess risk does play a part. That is probably why I go climbing rather than walking! So I guess risk is a factor, but one element and managed risk* (#29).

Although differences exist in the intensity and immediacy with which climbers experienced the connection between focus and risk management, there is overall harmony amongst the

different expressions of this subordinate theme, illustrated by the frequent use of the same descriptive terms, such as, 'concentration' and absorption':

> *The focus engendered by the risky situation is all absorbing* (#31).
> *My other main motivation is that I know of few other activities that require a certain concentration* (#35).

Importantly, some remarks (e.g., #35) also suggest that focus not only represents a means to manage risk, but also as a positive experience, valued in itself.

5.4.2.4 Courage

Several climbers referred to the need to confront and control feelings of fear in order to effectively manage the risks faced when climbing. One climber commented:

> *My most memorable climbs have all been trad or solo. That is where your head is stimulated. Climbing is not just about physical ability but about the mind games. Can I control my fear? Can I overcome my reluctance to commit? etc. When you are managing risk and pushing things then you start to really appreciate life* (#20).

Importantly, this climber openly reported experiencing feelings of fear when climbing. However unlike those climbers deterred by fear, for this climber having the ability to 'commit' to a situation they experience as scary is seen as key to the successful containment of the risks one is exposed when climbing. Although the connection between having the courage to face fears and effective risk management was only implied by their mention of tackling fears swiftly followed by the comment 'when you are managing risk', this sentiment was articulated more explicitly by another climber:

> *Climbing for me is getting over the mental fear aspect. Being able to overcome the fear of falling, and turning that energy into useful thought of how to solve the problem, and not thinking about falling. Once you reach that part of climbing, it is almost zen like* (#7).

Given this comment, it appears that this particular climber has a clear view of their understanding of the relationship between their experience of fear and their management of risks. More specifically, this climber suggested that the energy aroused in frightening circumstances should be tapped into and directly applied to the task of solving problems, thus conveying a direct link between having courage and the ability to respond to the difficulties sometimes encountered when climbing.

Having considered the ways in which the risk intrinsic to mountain climbing was perceived by some climbers as representative of challenge, something to be managed with mastery, focus, and courage, several climbers continued this line of thought by offering accounts of the beneficial experiences and states they have achieved as a result of tackling the challenges presented to them by risk. Three such experiential states are described in turn.

5.4.2.5 Feelings of escape and alternative perspective

Several climbers expressed an understanding of their drive to participate in climbing in terms of the personal benefits gained from engaging in a focused activity. More specifically, some participants suggested that the degree of focus required to successfully manage the challenges inherent to climbing engenders feelings of escape:

> *While you are climbing, it's just you, the rock, your gear and your partner, no 'what's for dinner later', no bills to pay, no lateness for appointments, no traffic jams. It's the escape from the mundane day to day stuff by total focus on the current that is the appeal* (#14).

Having earlier expressed an understanding of the relationship between risk and concentration, and how such focused concentration motivates their participation, this climber went on to suggest that the level of focus required often results in feelings of escape. Clearly, this climber welcomes the need to focus exclusively on the present when climbing, and values the simultaneous freeing of the mind of the 'mundane day to day stuff' this affords. This feeling is echoed by the account given by another climber:

> *My other main motivation is that I know few other activities that require a certain concentration, such that you can forget all other aspects of your life whilst climbing a route. That is like a mental relaxation from the pressures of everyday life* (#35).

Although both accounts above highlight the sense of escape experienced when truly focused on climbing, another climber talked in terms of 'perspective':

> *The focus engendered by the risky situation is all absorbing and the return afterwards is very good at putting many aspects of our modern lives (and I mean that in a largely derogatory fashion) back into perspective. Whilst perhaps seeming purposefully to return to the lowest tier of Maslow's 'Hierarchy of Needs' the process of successfully overcoming the physical 'risky' challenge helps me achieve self-actualisation – the highest tier, a sort of Maslow feedback loop?* (#31).

Arguably, the experiences this climber has when truly immersed in the challenge of safely climbing a route, on reflection, make many of the daily, non-life threatening concerns that previously consumed much of their time and energy less significant in their mind.

5.4.2.6 Thrill

Climbers also recounted the sense of thrill experienced having successfully mastered a challenging, and risky, climb:

> *When I am on a climb that really stretches my ability and I am at risk of falling and injury the buzz is even greater when I get to the top* (#2).
>
> *There is no denying that the adrenaline surge that comes after surviving a run out and poorly protected climb […], remains a hugely life-affirming experience* (#4).

For some climbers the excitement and thrill experienced after completing a route is accentuated if the climb has been both demanding and potentially hazardous. However, for other climbers, the mere possibility of a mishap, that the safe completion of a route is not assured, is enough to produce a 'frisson of excitement' openly valued by such climbers:

> *Things can go wrong in an instant; a loose hold, a rock falling from above, a sudden change in weather, a slip or a fall on descent […], the unexpected, or a misjudgement. I rate most of these things as low probability at the grade I can climb, but they are there, and that creates the frisson of excitement which makes it such a worthwhile activity* (#12).

Taken together, the accounts given by these and other climbers suggest that the thrill triggered by an awareness of having been exposed to risk, and having successfully managed that risk, is motivationally meaningful.

5.4.2.7 Authentic experience

One climber stressed the importance of the risk element inherent to mountain climbing as an antidote to what they perceived to be a world increasing devoid of risks:

> *I feel that in our overly health and safety conscious world […] some of the vitality of life is being lost because of the elimination of every day risks and this makes sports like climbing more important. I remember as a 5 & 6 year old walking 2 miles to school through deep snow in school shoes and shorts. I find it amazing that nowadays adults with modern clothing and equipment can get into difficulty on short walks in winter in the English and Welsh hills. I don't want to sound like a grumpy old man I am just trying to emphasise that I believe that risk is an important part of life and climbing is a good way of getting a controlled dose* (#21).

This climber clearly feels quite strongly that modern life cocoons people from experiencing and, crucially, learning how to deal with risk, highlighting the inability of some to negotiate local hills even with the aid of modern technology. Obviously, this climber believes developing the capacity to tackle risk is an important and healthy element missing from life today. Moreover, on a personal level, it is clear that this particular climber is strongly motivated by the reality of climbing, gaining satisfaction from being in situations characterised by genuine risk.

5.4.3 Master theme 3: 'Risk-seeker' identity

A small minority of the climbers made references both to the construction of an identity shaped around an inclination to court risk, and to the notion of a specific type of climber branded as dangerous. Both of these dimensions, organised here under the master theme of 'risk-seeker' identity, are presented below.

5.4.3.1 Self-identity

One climber appeared to prioritise the importance of risk to their self-identity, opening their account of their motivations for climbing with the following comment:

> *When I began climbing in college, the risk was definitely a big part of my identity as a climber [...]. I had an inherent love of the sport, to be sure, but I also liked the idea of being known as a climber. It supplied for me a little extra status and confidence. I guess all guys want to have some sort of edgy aspect to their personality or image. [...] So, I guess for me, risk added to the image of the climber that I promoted but it was not something that I sought as a practicing climber* (#28).

From this comment, it is clear that this climber valued the kudos achieved through being associated with an activity perceived as risky. This climber remarked on how being thought of as an 'edgy' person, something they admitted to actively encouraging, bolstered their confidence and made them feel more important in social circles. However, they were also keen to stress that although the importance of their identity motivated their continued participation and served a purpose within a social setting, in reality they were not actually interested in seeking out risk in their climbing endeavours.

5.4.3.2 Dissociation

Other climbers were eager to highlight their disapproval of climbers they perceived as dangerous:

> *If there is someone about who is dangerous, I don't want them around me. Simple. Even soloing severe above 5-6m is going to mean I'll have to clean the mess up. Or*

> *if climbing with gear around me/with me, then their actions may hurt me or others and that is not their right, so nuts to 'em. Don't want dangerous people at the crag* (#17).
>
> *My response to the element of risk was to do everything I could to eliminate it. I have never courted it and would carefully avoid climbing with people who I suspected DID court it: a death wish is an uncomfortable climbing partner* (#10).

These comments appear to reflect a strong desire to create a distinction between responsible and irresponsible climbers, with the climbers who made these comments clearly motivated to distance themselves from the type of climbers they perceive as reckless risk-seekers. Moreover, the first of these climbers not only didn't want to be associated with those who they perceive to be dangerous climbers, they also expressed forceful negative feelings towards such climbers, revealed, for example, by their statement concerning their unwillingness to assist any such risk-seeking climber if they had an accident.

5.4.4 Master theme 4: Risk and revision of priorities

Though not strictly related to the content of climbers' motivation for mountain climbing, a number of salient subordinate themes emerged concerning the climbers' changing perceptions of the relevance of risk, and the process of discovery they went through when they reported their motivations. Both of these subordinate themes are now addressed.

5.4.4.1 Changes in the relevance of risk

Some climbers suggested that the significance and meaning attached to risk had changed for them over time. More specifically, they implied that previously risk may have been relevant to their motivations for climbing, but that now the relevance had greatly diminished:

> *I've noticed that as I've got older I've become more risk averse (i.e. more careful in assessing potential for injury or death and less willing to commit to moves at the limits of my ability). I think this is partly recognition of my responsibility to house,*

> *clothe and feed two children, and partly the fact that broken bones now take longer to heal* (#4).
>
> *Today, at my age, none of this image thing really matters. I do not go out of my way to discuss climbing with people or to be known as a climber. I have definitely become a more careful climber as I have grown older* (#28).

With these statements these climbers inferred a shift in priorities. The first comment demonstrated this climber's commitment to their family and consequent relegation of any precedence they may have given to risk in the past. Similarly, the second comment displayed a complete change in the importance one climber put on having an image that rested on the idea of them participating in a 'risky' pursuit. Without doubt, for some climbers, the relevance of risk and its motivational import had significantly decreased over time.

5.4.4.2 Process of discovery

One climber's comments hinted at the possibility that they were fully considering and consequently discovering their personal understanding of the importance of risk to their motivations for the first time:

> *I would say I am risk averse [...]. I don't like being scared and say my primary reason for climbing is that I like the outdoor, I like the places climbing takes place. However we come back to the question, why climbing and not walking or MTB* (mountain biking) *[...] which would get me into very similar environments? And you would have to deduce that the risk element does provide an attraction. So in comparison to climbers...risk averse, in comparison to the population as a whole...probably welcome the element of risk that climbing provides* (#19).

Unlike other climbers who, on the face of it, launched into very clear accounts of their understandings of their motivations, this particular climber gave the impression that they hadn't considered (prior to this study) the relevance of risk to their motivations for participation. That is, this climber appeared to talk themselves through their understanding

of the significance of risk to their participation in climbing during their response. What is more, the vocabulary used towards the end of their commentary (for example, 'probably') underscores the uncertainty of their position, perhaps attributable to a lack of previous consideration.

5.4.5 Master theme 5: Non-risk-related motives

Two additional motivations that stood out as significant to climbers' understandings of their desire to climb, that were not related to risk, concerned the environment in which climbing is practised, and the social side of this pursuit.

5.4.5.1 Environment connection

A number of climbers articulated a deep affection for the environment in which they climb, and in so doing highlighted the fundamental importance of access to and connection with mountain landscapes:

> *I took to climbing because it brought me to places that a walker would never visit, and gave me a close and intimate involvement with the bones of a mountain. The scenery on some of the major crags is astounding, but you have to climb to experience it* (#10).
>
> *I climb because I love the whole experience of being outside in the fresh air [...] and the view from the top!* (#26).
>
> *My motivations are getting outside, preferably to remote places* (#29).

For these climbers, getting access to and directly experiencing parts of the environment they otherwise would not, soaking up the aesthetics and elements, is a clear motivation for their climbing.

5.4.5.2 Social engagement

Lastly, the camaraderie fostered through climbing together with a sense of community emerged as strong motivations for climbing:

> *The people I have met through climbing are some of the finest people I have been lucky enough to get to know. They always want to share their knowledge and to support others' progress. [...] The kindness and human spirit that I have witnessed among climbers [...] is heart-warming. It restores my faith in human nature and if this companionship and care was evident throughout all groups in society, the world would be a better place indeed* (#26).
>
> *Lastly, climbing is a great way to enjoy the fantastic British countryside in excellent friendly company, not just of my climbing partner but in the company of other unknown climbers who you may chat to but never see again* (#35.)

These comments underscore the importance placed on the sense of community, on co-operation and support, and on the simple pleasures associated with socialising with like-minded people, something felt keenly by these climbers. Moreover, inferences were made by one climber that the quality of social support they experienced through their climbing stood apart from that they encountered in other spheres of their life: one climber remarked, 'if this companionship and care was evident throughout all groups in society, the world would be a better place indeed'.

5.5 Discussion

The interpretative phenomenological analysis presented here provides a revealing account of the numerous meanings mountain climbers attach to the element of risk associated with climbing. Arguably, one of the most striking features of the findings concerns the breadth of meaning connected to the notion of risk. Moreover, although the ways in which risk was understood and given value by climbers were at times complex, only very few climbers wholly rejected the relevance of risk to their motivations for mountain climbing. Overall, it appears that varied subjective meanings attached to risk permeated a great many motivations reported for mountain climbing. A discussion of the emergent master themes now follows with due consideration paid to the ways in which the findings presented here resonate with and diverge from those provided by previous relevant research.

Prominent in the accounts given by climbers was the idea of 'risk management'. The need to manage risk when climbing was experienced by many as a 'challenge', a quality that has previously been highlighted as central to climbers' motivations for this activity (Delle Fave, 2003; Ewert, 1994; Willig, 2008). Importantly, the treatment of risk and challenge in previous quantitative analyses of mountain climbing typically overlooks the relationship between these two motivations, usually concluding that risk contributes little to people's motivations to mountain climb, unlike challenge which is portrayed as a dominant motivation (e.g., Ewert, 1994; McIntyre, 1991). Accompanying interpretations of such data talk in terms of climbers' being motivated by challenge and not the associated risks *per se* (e.g., Delle Fave, 2003). However, given the current findings, conclusions of this kind appear somewhat oversimplified, overlooking the seemingly interdependent relationship between challenge and risk. Moreover, Creyer, Ross, and Evers (2003) noted the inappropriateness of research into high-risk recreation that adopts the same approach as that conventionally employed in research investigating high-risk consumption behaviour, a field focused on the value attributed specifically to risk. Essentially, the interpretation presented here mirrors previous research that concluded risk operates as a means to an end, but not an end in itself (Creyer et al., 2003; Krein, 2007). That is, to evaluate the motivational importance attached to risk in isolation fails to acknowledge its instrumental function with respect to the satisfaction of other associated motivations, such as challenge.

Participants expanded upon their experiences of risk management stating a number of ways in which they felt able to successfully control the risks inherent to their climbing, and therefore meet the challenges they face. More specifically, three such emergent means to risk management were identified: 'mastery', 'focus' and 'courage'. Differing from quantitative research that has identified mastery as a discrete motivation for mountain climbing (e.g., Ewert, 1994; McIntyre, 1991), the current interpretation of the meanings given to mastery are more akin to those outlined in previous qualitative studies (e.g., Willig, 2008) that draw attention to the relationship between challenge and mastery. To be more precise, the motivational meaning the climbers attached to mastery appeared to be contingent, with mastery acquiring meaning through its role in risk management. Furthermore, participants' understandings of the relevance of mastery to the containment of

risk also resembled that outlined by Lyng's (1990) concept of 'edgework'. According to Lyng (1990), individuals who engage in activities characterised by the potential to sustain physical harm or experience disorder seek to manage the 'edge' between such harm and health, order and disorder, by mastering skills relevant to the successful negotiation of this boundary.

The subordinate theme 'focus' also resonated with elements of Lyng's (1990) theory of edgework. Participants suggested that the risks inherent to climbing, experienced as challenge, required a focused approach. Participants maintained that a heightened level of focus was crucial to the effective management of potentially risky climbing situations, and that resultant states of concentration were experientially valued. This mirrors a defining feature of edgework, where people's

> "perceptual field becomes highly focused: background factors recede from view, and their perception narrows to only those factors that immediately determine success or failure in negotiating the edge." (Lyng, 1990, p. 861).

Key to both the accounts given here and to descriptions of edgework is the sense that the demands placed on individuals engaged in potentially risky behaviours necessitates focused concentration. Unlike edgework, a theory specifically concerned with activities characterised by the potential for significant risk or disorder, Csikszentmihalyi's (1988, 1992) concept of 'flow' also exhibits a degree of similarity to the sense of 'focus' presented here. In fact, whilst not exclusively concerned with risky pursuits, the concept of flow has been applied to the study of mountain climbing, highlighting, amongst other things, the degree of focus required in this activity:

> "The physical and mental requirements involved in staying on the rock act as a screen for the stimuli of ordinary life – a screen maintained by an intense and focused concentration." (Csikszentmihalyi, 2000, p.81).

Similarly, both Willig's (2008) theme of 'being in the present' and the notion of 'mindfulness' (Brown & Ryan, 2003) lend themselves well to the emergent theme of focus identified in the present study. Mindfulness, defined as: "the clear and single-minded awareness of what actually happens to us and in us at the successive moments of perception" (Nyanaponika Thera, 1972, p.5), is frequently discussed in terms of the resultant positive influence such states have on psychological well-being (e.g., Burgoon, Berger, & Waldron, 2000; Reiss, 2000; Ritchhart, & Perkins, 2000). Importantly, participants' experiences of focus were welcomed and valued, with several making clear the relationship between focus and feelings of escape, universally articulated as a positive experience.

Climbers also reported experiences characterised by the need to overcome feelings of fear. Moreover, the climbers ruminated over their emotions revealing that whilst the experience of fear was not in itself pleasurable, the sense of control and accomplishment resulting from successful containment of these emotions and therefore management of potential risky situations, was positively evaluated, something reflected in both previous research exploring mountain climbing experiences (e.g., Kiewa, 2001), and 'extreme sports' more generally (e.g., Brymer & Oades, 2009).

Each of the strategies highlighted by participants as means to effectively deal with the challenges faced, including the risk inherent to them, were described in positive terms, therefore indicating that such experiences and the associated demands were perceived as positive and fundamentally motivating.

Some of the climbers provided accounts of the nature of experiences that resulted from the successful management of risky climbing situations, instances in which they had used some of the adaptive means outlined above. Thus, the climbers presented an extended understanding of the way in which they experienced the relationship between the challenges faced, the means employed to tackle them, and the resultant positive experiences. Both 'feelings of escape' and the idea of having had an 'authentic experience' emerged as significant motivating experiences for the participants.

The notion of 'escape' also resonated with the theoretical perspectives allied to the aforementioned theme of 'focus', namely, edgework (Lyng, 1990), flow (Csikszentmihalyi, 1992), and mindfulness (Brown & Ryan, 2003). In fact, the sense of escape as expressed here is best understood when considered in conjunction with the emergent theme concerning focus. More specifically, participants remarked on the general sense of escape and freeing of the mind of everyday worries enforced by the degree of focus required to effectively manage potential risky climbing situations. Feelings of escape, articulated in terms of not having to think about 'mundane day to day stuff', and the accompanying feelings of absorption and relaxation, were highly valued by the participants and represented an unambiguous motivation for climbing.

There exists a wealth of quantitative studies that have analysed thrill seeking in mountain climbers, and numerous other pursuits characterised by an element of risk (Cronin, 1991; Feher, Meyers, & Skelly, 1998; Llewellyn, & Sanchez, 2008; Slanger, & Rudestam, 1997). Perhaps of more relevance to the current study is Willig's (2008) qualitative analysis that explored the nature of actual experiences of thrill in mountain climbing. Willig (2008) presented an interpretation that defined the pleasurable states experienced in climbing in terms of 'feeling high' and 'elated' without making an explicit connection between surviving risky scenarios and the elicitation of such feelings. This stands in contrast to the present findings where participants framed the thrill of climbing in terms of the exhilaration and affirmation experienced specifically as a result of successfully managing risk.

The type of challenges encountered when climbing, that is challenges with real and meaningful consequences, also provided several participants with feelings that they were engaged in an 'authentic experience'. Moreover, the gravity of potential outcomes resulting from mismanaged and even uncontrollable risks characteristic of mountain climbing supplied experiential feelings that differed significantly from those encountered in everyday life (McNamee, 2007). Akin to the present findings, research into adventure pursuits has highlighted the appeal of activities that represent an alternative to the level of security and control experienced in everyday life (Kane & Tucker, 2004). The sense of needing to find

an antidote to "modern industrial society [that] is obsessed with safety and control" (Breivik, 2007, p. 15) was keenly felt by many of the participants, and mountain climbing appeared to satisfy this need. Apparently, for some of the participants risk is an indicator of authenticity, and represented a refreshing change to the unnatural insulation from risk experienced in other sectors of their lives.

Running through participants' responses was a sense that the risks intrinsic to mountain climbing somehow 'added value' to the resultant experiences. Fundamentally, the participants commented on how they experienced greater satisfaction, more intense relief, heightened fun, and essentially valued more, climbing characterised by an increased element of risk. To the author's knowledge, with one exception (Kiewa, 2001), mountain climbing-related research has not explicitly addressed the notion that the risks inherent in climbing magnify the value attributed to the positive feelings experienced both during and after a climb. Kiewa (2001) has, however, remarked on the amplified sense of satisfaction experienced by climbers who had worked hard to control acute feelings of fear. Also, somewhat similarly, the responses reported here bear some resemblance to those featured in health psychology literature concerning the greater sense of commitment and value attributed to 'unsafe' sexual practices by some homosexual men (e.g., Crossley, 2001, 2004). It would appear that participants exhibited a tendency to 'calculate' the gains, or more generally the value attributed to climbing endeavours in terms of the severity of the potential loses.

Having considered each of the subordinate themes organised under the master theme 'risk management', those subsumed within the master theme 'risk-seeker identity' are now discussed. For one participant, taking part in a 'risky' activity contributed to their sense of identity. The climber suggested that they valued the status and kudos they acquired through having a reputation as someone who took part in mountain climbing, an activity often perceived by others as 'edgy' and as ultimately dangerous. The sense of image and identity that emerged in the current response resonated with that identified by both quantitative (e.g., McIntyre, 1991) and qualitative (Willig, 2008) studies into this activity. McIntyre (1991) referred to this sense of identity as 'recognition', whereas Willig (2008) employed

the label ‘other people’ to convey the value placed on the recognition from others that climbers received as a result of their participation in an activity considered different to the norm. Crucially, although the current participant valued the status and consequent increase in confidence experienced as a result of being known as someone who participated in a risky activity, they were unambiguous in their statement that in reality they were not interested in the explicit pursuit of risk, and did not court it.

Further to the idea of identity construction akin to that highlighted in previous research, the current findings revealed an additional theme related to participants’ tendency to categorise climbers according to whether they were perceived as ‘responsible’ or not. Moreover, participants were eager to create some distance between themselves and what they perceived to be their responsible approach to the risks intrinsic to climbing, and those deemed irresponsible, and reckless in their search for greater risk. Accordingly, there appeared to be a fine line between the motivational impetus associated with the challenge of managing risk, something clearly advocated by many, and climbing perceived by some as reckless and thus considered unacceptable.

Although not precisely related to the motivational meanings attached to the risk factor associated with mountain climbing, a number of subordinate themes concerning, amongst other things, changes in the prioritisation of risk, were grouped under the master theme ‘risk and revision of priorities’. For a number of participants, the relevance of risk to their participation in mountain climbing had diminished over the years. This finding, in part, parallels the observation made by Ewert (1993) that climbers’ interest in the opportunity to engage in risks increased as they became more proficient. Clearly, risk takes on different meanings dependent on such factors as stage in life, and level of experience.

Of some relevance to perspectives that highlight the limits to people’s insight into the thoughts that govern their own behaviours (Nisbett & Wilson, 1977) is the response provided by one climber. Essentially, the climber’s response potentially suggested that, firstly, they had not specifically addressed the personal significance of risk to their motivations for mountain climbing before, and secondly, that rather than providing an

instant appraisal of the relevance of risk to them, they appeared to 'talk' themself through the idea, eventually coming to a conclusion to which they seemed far from securely committed. Further discussion of the accessibility of thoughts follows later.

Lastly, two subordinate themes unrelated to risk emerged as clear motivations for mountain climbing: 'environmental connection' and 'social engagement'. The aesthetics of, connection with, and enhanced access to mountain landscapes, and as such the natural environment, were all identified as key factors contributing to engagement in mountain climbing. Importantly, unlike other research into mountain climbing that has highlighted the importance placed on the mountain environment in relation to its wildness and associated risk (e.g., Brymer & Oades, 2009; Dougherty, 2007; Krein, 2007; Stebbins, 2005), the meanings and value attached to the environment by the current participants were unrelated to risk.

The social dimension of mountain climbing experienced as camaraderie and a sense of community was highly valued by a number of climbers. Moreover, participants' responses echoed existing research findings that have drawn attention to the social aspect of climbing and its significance to those who participate in this activity (Ewert, 1994; Stebbins, 2005).

Overall, the analysis presented here investigated the meanings assigned to the risk intrinsic to mountain climbing, thus providing an assessment of the relevance of risk to mountain climbers' overall motivation for participating in this pursuit. Importantly, this work represents a departure from existing research into this activity that has sought to quantify the relative importance of risk as a discrete motivational component (e.g., Ewert, 1993, 1994). In contrast, the present study offers a more expansive approach to the exploration of people's motivations for mountain climbing designed to reveal climbers' personal understandings of risk when considered within the context of the overall motivational basis to their behaviour. By asking participants to examine their thoughts about risk within the context of their motivations for climbing generally, it is also possible to gain some idea of the reasoning processes climbers go through and the connections they make between different motivating factors. This study also answers calls for analysis pitched at an

individual level, analysis that fully explores the subjective meanings associated with a particular form of 'extreme sport' rather than treating this 'type' of activity as ultimately homogenous (Willig, 2008).

The study also presented an opportunity to consider issues related to individuals' awareness of the thoughts and feelings that guide their behaviour (Nisbett & Wilson, 1977). Of particular significance to this issue are the apparent differences in the motivational relevance attributed to risk by the same participants in different studies. To recap, the participants in the current study were selected on the basis that they had not reported risk as a motivation for their mountain climbing in a previous study. Therefore, it was felt that by selecting this particular group of climbers it would be possible to examine the similarities or differences between the motivations they reported in this study compared to those they previously reported. Essentially, the rationale behind this was as follows: if participants agreed with the statement that climbers are motivated by risk and went on to comment on the relevance of risk to their participation, something that was arguably incongruous with their omission of risk from the motivations they reported in the previous study, then this was tentatively taken as evidence for the suggestion that people are not always aware of all the thoughts that drive their behaviour. Accordingly, that almost all of the participants freely articulated the relevance of risk to their mountain climbing appears to provide evidence in favour of this argument. Moreover, accepting the potential influence of the framing of the research question itself (see Wilson et al., 1995), the contrast between the instrumental and motivational meaning assigned to risk by the majority of the participants when providing responses to this study and the complete absence of risk in the previous study does raise questions concerning the accuracy and stability of motivational reports. Given the inconsistency between the motivations reported in the current study and those reported in the previous study (Study 3, Chapter 4), it seems reasonable to make three speculations in this regard. First, it seems that risk is not identified as a motivation as such within the minds of climbers, only acquiring motivational meaning when explicitly considered in conjunction with other motivating factors and expressed as such; essentially, risk alone is not mentally 'labelled' a motive. Second, the motivation significance attributed to risk is so complex as to be almost ineffable, thus rendering it less accessible in people's

minds and resulting in the frequent omission of risk from motivational reports for mountain climbing. Third, that unlike the methodology used in study 3, the approach employed in the current study led to the participants being more disposed to express their thoughts and feelings about risk.

Clearly, the findings reported here together with earlier suggestions that people have limited insights into their reasons for a given behaviour (see Nisbett & Wilson, 1977) have implications for research designed to reveal people's motivations. As such, the contrast between conclusions drawn in previous quantitative research that have suggested risk has limited motivational import and the current study's findings that indicated risk as integral to the motivations for this activity, presents a strong argument for the use of qualitative methods. In particular, in-depth interviews provide a highly suitable method for the identification of motivations that drive people's behaviour. That is, the interview process allows for the progressive emergence of thoughts and feelings of interest within an environment that encourages deep thought and reflection, something that quantitative approaches and forms of measurement frequently fail to do. Moreover, using qualitative methods of this kind as part of a mixed methods approach is in accordance with the epistemological stance assumed throughout the thesis.

Issues concerning the suitability of the specific qualitative approach adopted here and consideration of the limitations to the study are now discussed. The main reasons for selecting IPA as an approach to the current study over other qualitative approaches were threefold. First, given IPA's close affinity with psychology, and health psychology specifically, this approach was deemed particularly appropriate given the discipline within which the current thesis is grounded (see Brocki & Wearden, 2006). Second, IPA's phenomenological roots marked this approach out from other qualitative approaches due to its primary focus on the ways in which people makes sense of their own experiences and give meaning to such experiences, something key to the current study: an investigation of the significance and meanings attached to the risks encountered in mountain climbing. That is, the majority of IPA research to date has focused attention on the exploration of people's experiences, understandings and perceptions and this approach has subsequently been

highlighted as particularly apposite for research of this kind (Reid, Flowers, & Larkin, 2005). Moreover, other researchers interested in understanding the ways in which people relate to the natural environment (e.g., Seamon, 2000) have stressed the suitability of this approach given its essentially hermeneutic orientation. Clearly, the current research is also largely interested in the aforementioned human-natural environment interaction due to its focus on mountain climbing. Therefore, suggestions made by others (e.g., Seamon, 2000) that have underscored the fitting nature of this approach to research particularly interested in exploring the meanings people give to their interactions with the natural environment, have emphasised once more the appropriateness of this approach to the current investigation. The third reason for employing an IPA approach relates to the reflexive quality characteristic of IPA (Smith, 1996). More specifically, the double hermeneutic aspect fundamental to IPA that acknowledges the reflexive role of both participants and researcher was considered ideal by the author on two counts: first, the author had prior experience and interest in the activity under investigation, and second, the author had both studied relevant literature closely and was also aware of the findings of the three related studies that preceded the current one within the thesis. Essentially, IPA represents an approach that actively embraces researcher reflexivity, and actively encourages deep reflection from the participants, both qualities deemed essential for the current study.

A last note should be made concerning the specific approach employed for data collection for the current study. Although the majority of research that has employed an IPA approach has favoured interviews as the data collection method of choice, the current study collected data online in response to an open and broad yet stipulated research question. Online data collection clearly stands in contrast to the approach that has prevailed; however, having considered comments concerning the applicability of IPA to the exploration of varied forms of data (see Brocki & Wearden, 2006), the author felt the current application was both acceptable and defensible. Nevertheless, although IPA has been described as flexible enough to accommodate different approaches to data collection, it is necessary to acknowledge the limitations of the analysis of data collected online. Specifically, Brocki and Wearden (2006) remarked that alternative means of data collection, including online studies, may not yield data that allows for the depth of analysis possible with interview

data. No claims, however, are made with respect to the ability to generalize the findings and interpretation given here to other climbers. Obviously, the present interpretation is relevant only to the current participants, and it is openly acknowledged that additional unreported meanings attached to the risks inherent in climbing no doubt exist.

Although self-presentation is an issue that affects quantitative and qualitative research alike, as an online study the potential influence of the researcher was arguably reduced (Brocki & Wearden, 2006; Murray, 2004). More specifically, even though the participants were aware that the researcher was based at the University of Sussex, and it was possible to identify the researcher as a woman as a result of the name on the electronic mail communication, participants knew nothing of the researcher's experience of and views concerning mountain climbing, or the researcher's age, ethnicity, or suchlike. Given the limited amount of information disclosed to participants concerning researcher characteristics, the likelihood that responses were influenced by such characteristics is perhaps lowered. Similarly, the 'distance' between researcher and participant that online research affords arguably allowed for more candid and open responses (Murray, 2004). Taken together, the nature of the present research possibly resulted in responses that were influenced less by presentation issues than responses given in face-to-face interviews.

Now discussion returns to the notion of reflexivity inherent to IPA, and in particular to the role of researcher reflexivity. It has been pointed out by some commentators (e.g., Brocki & Wearden, 2000) that although the parameters of IPA clearly acknowledge the interpretative and therefore reflexive role of both researcher and participant, research that has employed IPA has often failed to make explicit the interpretative role performed by the researchers themselves. That is, even though the double hermeneutic characteristic of IPA represents one of the key features of this approach, researchers frequently overlook the part they have played throughout the research process when the overall interpretation is presented. Accordingly, a statement concerning the reflexive role of the researcher now follows, paying particular attention to the researcher's personal experience of climbing, interactions with other climbers, and knowledge of the research findings obtained throughout the programme of research thus far. In brief, the researcher has some experience of low grade

climbing, and had spoken at length to several climbers as part of related research together with the three studies presented in the preceding chapters. Moreover, the researcher was aware of the findings from the aforementioned three studies that precede the current one, and was also particularly focused on the responses given by the current sample in the previous study, as this formed the basis of their selection. That is, the researcher specifically selected the current participants based on the absence of any mention of risk in their responses to the previous study. Although it is important to acknowledge the potential influence of the researcher's experience and their knowledge of related research on the interpretative analysis of the data presented here, every effort was made by the researcher to suspend all previous knowledge and knowledge derived from personal experience of this activity in a bid to present an interpretation based first and foremost on the accounts provided by the participants (see Smith, 1996). Furthermore, the researcher took steps to avoid any bias in the resultant interpretation by seeking out a second opinion of another researcher practising in the field of psychology (see Brocki & Wearden, 2000). Nonetheless, the possibility remains that the experiences and knowledge of the researcher may have influenced the interpretation presented here. Yet, a highly salient and thought provoking observation has been made by Smith (2007) that concerns the relationship between one's preconceptions related either specifically or broadly to the subject under investigation and the process of data collection and analysis. Essentially, Smith (2007) suggested that one is not necessarily consciously aware of all their preconceptions prior to their engagement in the process of data collection and analysis, and that arguably it is this process that make one aware of their preconceptions, something referred to as "fore-understanding" (p. 10). To illustrate, during the current investigation a few climbers wrote about their desire to create a distinction between responsible climbers, something they viewed themselves as, and those who took what they considered to be a rather more reckless approach to climbing, a finding that was later given the theme label 'Dissociation'. During the analysis of the data the researcher was struck by this particular finding as it was not something that had been consider before by the researcher, and only during the process of recognising this as a theme did the researcher become aware of this additional understanding, and therefore appreciate that it stood out as an interpretation related to risk that had not been anticipated by the researcher until that point.

In brief, the analysis reported here sheds light on a controversial and frequently misconstrued feature of mountain climbing, namely, risk. Contrary to two existing and commonly endorsed views (one, that risk is comparatively irrelevant to people's motivations for mountain climbing, and two, that people actively seek out risk expressly for the thrills directly associated with it), the current findings point to a variety of meanings climbers attributed to the risk experienced in mountain climbing. It appears that although the climbers did not expressly report risk as a motivator itself, the risk inherent to climbing did acquire motivational meaning when considered in conjunction with a number of additional factors explicitly reported as motivations. Importantly, risk was positively valued by almost all of the participants, with a few exceptions who experienced risk as a deterrent. Given the apparent effectiveness of the qualitative approach employed here in identifying the motivational significance of risk to mountain climbing, it appears reasonable to recommend this approach to further research into this activity and other experiences of a similarly complex nature.

CHAPTER 6
General Discussion

This final chapter begins with an overview of each of the four empirical studies, summarising the key findings presented in each. Following this, a comprehensive reflection on the programme of research as a whole is provided, returning to, expanding upon, and adding to, discussion points featured in each of the empirical studies. As part of this commentary, due consideration is paid to the contribution made by the research presented here, detailing how the approaches employed and the resultant findings both resonate with and diverge from those reported in existing research focused on motivations for mountain climbing, and risk-related behaviour generally. Limitations of the current research are noted, followed by a discussion of a number of methodological and practical implications of the present findings, together with suggestions for possible future research directions.

6.1 Study summaries

Study 1 was principally concerned with both the interrelatedness of a number of behavioural beliefs previously identified (in a pilot study) as relevant to people's participation in mountain climbing, and the ability of these beliefs to predict people's attitudes towards participating in mountain climbing. Principal components analysis of behavioural belief x outcome evaluation products identified six components: *Accomplishment*, *Meaning*, *Engagement*, *Focus*, *Conflict*, and *Personal Risk*. Then, using a TPB (Ajzen, 1991) framework, participants' behavioural beliefs, attitudes and intentions were assessed in relation to their participation in mountain climbing. Both *Accomplishment* and *Engagement* were significant predictors of attitudes, such that participants who reported higher *Accomplishment* and *Engagement* scores tended to hold more positive attitudes towards participating in mountain climbing. However, *Personal Risk* was only weakly positively related to attitudes, with participants who reported higher *Personal Risk* scores generally holding more positive attitudes towards participating in mountain climbing. In contrast, *Meaning*, *Focus*, and *Conflict* were not significant predictors of attitudes. Moreover, both attitudes and PBC, but not subjective norms, emerged as significant predictors of intentions to participate in mountain climbing. Overall, the results

seem to suggest that people's intentions to participate in mountain climbing are guided by attitudes predominantly related to beliefs unconnected to perceptions of risk. Furthermore, the results also appear to indicate that a variety of beliefs and values motivating people's participation in mountain climbing are unrelated to consumption (see Loewenstein, 1999).

Study 2 sought to examine a wide variety of different types of mountain climbing. More specifically, the main objective of the study was to identify characteristic components (using the behavioural belief items from study 1) that, in turn, could identify potential differences between the different types of climbing. Results from a principal components analysis revealed a three component structure: *Challenge*, *Risk*, and *Enjoyment*, therefore indicating that a number of factors contributed to people's perceptions of the different types of climbing studied. Importantly, both the Challenge and the Risk components accounted for very similar amounts of variance in perceptions of the different types of climbing, thus revealing that characteristics related to both risk and challenge (and to a lesser extent, enjoyment) featured in people's perceptions of a broad range of types of climbing. Adopting a psychometric approach, the types of climbing were mapped onto a two two-component spaces; one featuring the Challenge and Risk components, and one featuring the Risk and Enjoyment components. A number of clear differences between the different types of climbing in relation to their position on each of the components were observed.

Additional attention was paid to the unique component structure of each type of climbing studied, followed by an examination of which components best predicted attitudes towards participating in the corresponding type of climbing. Of interest to the current programme of research were findings indicating that, unlike in the overall principal components analysis, items such as *risk* and *challenge* loaded onto the same component for three different types of climbing. This provides some support for suggestions that for certain types of climbing the notion of risk may represent something qualitatively different to the notion of risk associated with other types of climbing. Overall, Risk component scores revealed mixed relationships with attitudes towards participating in the different types of climbing. More specifically, for those types of climbing positioned relatively high on the Risk component (*traditional climbing*, *ice climbing*, *free soloing*, *deep water soloing*), together with

bouldering that assumed a low position of the Risk component, ratings of Risk were significantly negatively related to attitudes towards participating in the corresponding type of climbing. That is, for these types of climbing, those participants with higher Risk component scores reported more negative attitudes towards participating in the corresponding type of climbing. For the remaining three types of climbing (*scrambling*, *aid climbing*, and *sports climbing*), ratings of Risk were not significantly related to attitudes.

Study 3 presented a study that built upon the findings presented in study 1 by providing an examination of the structural organisation of motivations reported for three types of mountain climbing. Also informed by the findings reported in study 2, this study focused specifically on the motivations reported for participating in *traditional climbing*, *winter climbing*, and *free soloing*, types of climbing identified in study 2 as characterised by relatively high levels of risk. That is, it was felt that by investigating these types of climbing the likelihood that risk would be identified as a motivation was increased and, in turn, this would facilitate the examination of how risk may relate to other motivations reported for these types of climbing. Overall, fifteen categories of motivation were reported. Significantly, given the focus of the present research, 'risk' was reported as a motivation for participation by each of the three groups of climbers. Thus, these findings alone indicate that risk bears some relevance to the sample's motivations for participating in the three types of climbing. Adopting a means-end chain approach (Reynolds & Gutman, 1988), individual cognitive maps were constructed for each of the climbing groups. However, although 'risk' features in the cognitive maps for both *traditional climbing* and *winter climbing*, 'risk' did not appear in the map for *free soloing* due to the low frequency with which it was reported. Moreover, results that showed 'risk' only featured in two motivational chains, together with results indicating the low position 'risk' assumed on a number of indices, suggest that risk is less influential than other motivations reported for participation. Importantly, risk was not reported at the end of any motivation chains, therefore tentatively supporting suggestions that risk is not pursued for itself.

Extra consideration was given to the relationship between the individual motivations and linkages and attitudes towards participating in *traditional climbing* (the other types of

climbing were excluded from this stage of analysis due to small sample sizes). More specifically, the study sought to identify which of the motivations and linkages best predicted attitudes. Overall, although the results suggest those climbers who reported the motivation 'fear' and the linkage 'achievement – self-esteem' less frequently held more positive attitudes towards participation in *traditional climbing*, neither relationship was significant.

Study 4 presented a qualitative study that developed further the contributions made by the preceding studies by investigating the meanings climbers attribute to the element of risk characteristic of mountain climbing. Interpretative phenomenological analysis identified five emergent superordinate themes: *Risk as a deterrent*, *Risk management and associated rewards*, *'Risk-seeker' identity*, *Risk and revision of priorities*, and *Non-risk related motives*. Taken together, the findings presented appear to suggest that the risk associated with mountain climbing acquired motivational meaning when considered in conjunction with additional factors expressly reported as motivations. Accordingly, the analysis reported provides some support for the findings presented in study 3 that suggest risk is relevant to people's participation but not pursued as an ultimate goal in itself.

6.2 General discussion

6.2.1 The relative importance of risk to people's participation in mountain climbing

At the most basic level, the research findings presented in each of the empirical studies consistently indicated that, although risk was reported as a motivation, a number of additional motivations unrelated to risk were also reported as important to people's participation in mountain climbing. Moreover, studies 1 and 2 provided evidence that suggests the relationship between risk and attitudes towards participating in mountain climbing, both generally and in relation to a number of different types of climbing, is relatively weak when evaluated against the relationships between alternative non-risk-related motivations and attitudes towards mountain climbing. To illustrate, study 1 identified motivations concerning both achievement and engagement as more powerful predictors of attitudes towards mountain climbing than was risk. Furthermore, the findings presented in study 2 largely echoed the results reported in study 1 by highlighting the

greater significance attributed to characteristics pertaining to *challenge*, *enjoyment*, and *perspective* in relation to attitudes towards a variety of different types of climbing, in contrast to the marginal significance attributed to risk. Similarly, the findings reported in study 3 reinforced further the results presented in the preceding studies concerning the comparatively weak motivational influence risk had on participants' attitudes. That is, both the *prestige* and *centrality* indices (markers of the importance attributed to a motivation and the degree to which each motivation is related to all other motivations, respectively) clearly revealed the less than central or prestigious position risk assumed within the motivation chains reported for the three types of climbing studied. Moreover, inspection of the cognitive maps derived from the motivational chains clearly showed the relative infrequency of reports of risk as a motivation, and the absence of risk from the majority of the motivational chains featured in the maps. Furthermore, the seemingly minor role played by risk was exemplified by its absence from the *free soloing* cognitive map due to the low level with which it was reported as a motivation within this specific context. Also noteworthy were people's spontaneous accounts of a number of motivations unrelated to risk given in response to the research question presented in study 4 that expressly sought to acquire an appreciation of the meanings climbers attribute to the risk intrinsic to mountain climbing. That is, even when participants were explicitly asked to consider the relevance of risk to their participation in mountain climbing, they were seemingly keen to comment on various additional motivations unconnected to risk, such as the mountain environment and the social benefits experienced as part of participating in this activity. Evident throughout the results discussed above is the sense that, although risk is relevant to people's motivation for mountain climbing, it is perhaps less salient to people's participation in this activity compared to a number of alternative motivations unrelated to risk.

Together these findings have resonance with existing research concerned with the motivational basis to people's participation in mountain climbing. Indeed, a number of studies have previously concluded that the motivational import expressly attributed to risk is less than that assigned to other motivations for mountain climbing including, for example, exhilaration (e.g., Ewert, 1994), challenge (e.g., Delle Fave, Bassi, & Massimini,

2003), skill development (e.g., Delle Fave et al., 2003), recognition (e.g., McIntyre, 1991), and the environment in which climbing takes place (e.g., McIntyre, 1991).

Furthermore, the present research findings both respond to, and reinforce, suggestions that research concerned with the acquisition of a more comprehensive understanding of the motivations that drive people's participation in risk-related behaviours would benefit from an approach that includes the appraisal of both costs and benefits, or positive and negative attributes, associated with behaviours of this kind (see Goldberg, Halpern-Felsher, & Millstein, 2002; McKenna & Horswill, 2006).

6.2.2 The relevance of risk to different types of mountain climbing

By and large, existing research on mountain climbing tends to have overlooked the varied practices subsumed within this activity. To be more precise, studies that have examined the motivations and experiences reported by climbers have either focused on groups of climbers engaged in a single type of climbing, or analysed differences in the motivations reported by groups of climbers based on their experience level (e.g., Ewert, 1993) and level of involvement (McIntyre, 1991). Prompted both by an awareness of this omission in current mountain climbing-related literature, together with comments that drew attention to the multifarious nature of this pursuit made by participants who completed study 1, it was felt important to address this apparently neglected aspect of mountain climbing. However, it should be noted that due to the exploratory nature of the current programme of research, study 1 purposefully eschewed providing a strict working definition of mountain climbing so as to be as inclusive as possible in the hope that a sufficient number of responses would be obtained for this preliminary stage of investigation. Crucially, although study 1 provided a solid basis from which to progress, in order to meaningfully build upon this foundation it was deemed necessary to conduct an assessment of the characteristics climbers associated with a wide variety of different types of climbing. Accordingly, the current thesis makes a unique and important contribution to existing research on mountain climbing having presented the first study designed to describe and quantify the varied nature of the diverse practices frequently grouped together and given the broad label mountain climbing. That is, study 2 provided an assessment of the relationship between a wide range of characteristics

often associated with mountain climbing generally and eight distinct types of climbing recognised in the world of climbing. Also of particular importance to the thesis was the ability of this level of analysis to identify specific types of climbing characterised as relatively high-risk, thereby signalling which types of climbing would provide a more fruitful focus for the later studies which were designed to examine further the relevance of risk to motivations for participation.

Overall, the results presented in study 2 revealed some clear differences between the eight types of climbing studied in relation to the three components identified: *Challenge*, *Risk*, and *Enjoyment*. However, given the disparate practices associated with the different types of climbing, this finding was fairly unsurprising. Noteworthy were the results from the individual attitude regression analyses for the different types of climbing. More specifically, the pattern of results that emerged bolstered the supposition that a psychometric approach would facilitate the identification of specific types of climbing for which the notion of risk was more relevant. To be precise, for the types of climbing that were located relatively high on the *Risk* component in the overall principal components analysis, the results from the individual principal components analyses showed that attitudes were significantly related to ratings of *Risk*. In contrast to this, attitudes towards the types of climbing that were located low on the *Risk* component in the overall principal components analysis were not related to ratings of *Risk*. Bouldering represented the one exception to this general pattern: the regression analysis for this type of climbing indicated that ratings of *Risk* were significantly related to attitudes. Although the findings reported provide promising indications as to which specific types of climbing might best be pursued by research focused on perceptions of risk, undoubtedly further research exploring perceptions of different types of climbing, together with the relationship between perceptions and attitudes toward different types of climbing are needed to validate the findings reported.

6.2.3 Risk as a means to other motivations of value

Existing quantitative studies that have examined people's motivations for mountain climbing have typically adopted an approach designed to identify discrete categories of

motivations, and thus conclusions tend to rest on results concerning the proportion of variance in motivations that can be attributed to the discrete categories of motivations identified (e.g., Ewert, 1993, 1994; McIntyre, 1991). Previous comments made in the discussion of study 1 stressed the limits to research based solely on this approach as it neglects potentially important relationships between different categories of motivations, a criticism that also applies to study 1 when it is viewed in isolation. In view of this general limitation to existing research on mountain climbing, the thesis made an attempt to advance current understandings of the motivational basis to mountain climbing by presenting an account of the organisation of, and relationships between, a variety of motivations reported for three different types of climbing. Significantly, this represented the first study of its kind applied to the examination of participation in mountain climbing.

Especially pertinent to the present thesis were results reported in study 3 that clearly showed 'risk' was reported as a motivation for each of the types of climbing studied. However, perhaps more significant was the finding that 'risk' was not positioned at the end of any of the motivation chains created from the analysis of the motivations reported by each of the three groups of climbers. Based on these findings, it was possible to very tentatively conclude that, within the context of the three types of climbing studied, even though 'risk' was relevant to the sample's motivations for climbing it was not pursued as an end in itself. Moreover, these results find support from suggestions made by others that, although risk is not a goal *per se*, risk represents a necessary condition that operates as the means to the satisfaction of alternative valued motivations that guide people's participation in mountain climbing (Delle Fave et al., 2003; Ewert, 1994). For example, Ewert (1994) was keen to emphasise the importance of engaging in activities that provide challenges with meaningful and fateful outcomes. Ewert (1994) went on and stated that this type of challenge, where people need to employ their own skills to successfully manage the challenges faced, provides the means to the experience of optimal experiences, such as 'flow' (Csikszentmihalyi, 2000). In the same way that Ewert (1994) highlighted the link between challenge and optimal experiences, the findings reported in study 3 suggested that climbers are motivated by risk as a means to the accomplishment of alternative motivations. Due to the novelty of this approach to the study of motivations for mountain climbing

together with the small sample sizes for both the *winter climbing* and *free soloing* groups, further research is needed to confirm and expand the findings presented in the third study.

Nonetheless, the findings reported in the final study also appeared to provide support for the idea that risk operates as a necessary means to the satisfaction of alternative valued motivations. That is, the analysis of the meanings a sample of climbers attributed to risk within the context of their climbing suggested that, although not perceived as a motivator itself, the risk associated with climbing acquired motivational import when it was appraised in conjunction with other motivations explicitly reported as important to participation. As an illustration of the motivational significance attributed to risk, 'Risk management' represented one of the main emergent themes featured in the analysis presented in study 4. That is, the desire to tackle the risks faced when climbing was associated with heightened levels of focus, which in turn resulted in a sense of escape, something valued highly by some of the climbers. In view of this, it is possible to gain an appreciation of the ways in which the risk associated with mountain climbing acquired motivational meaning and significance for some climbers.

Also prominent throughout the thesis were motivations broadly concerned with challenge, engagement, enjoyment, and the provision of a different perspective. As has been noted, motivations of this kind have previously been identified as significant to people's participation in mountain climbing (e.g., Delle Fave, 2003; Ewert, 1993, 1994, McIntyre, 1991). Moreover, the findings reported in both studies 1 and 2 underscored the apparently independent significance attributed to these motivations, and risk. However, in contrast to this, the findings presented in study 4 provided a strong indication that the notion of risk permeated and fed into the meanings given to the additional categories of motivations reported. Importantly, it could be argued that the apparently different interpretations of the relationship between risk and alternative motivations presented across the studies were a consequence of the methodological approaches employed. Thus, it is worth emphasising the need for research into complex activities involving risk to carefully consider both what approaches are most appropriate, and the influence different approaches have on resultant findings.

In spite of this, the findings discussed in study 4, in particular, clearly resonated with the work of Lyng (1990). Evident in many of the climbers' accounts was the notion of risk management. More specifically, climbers clearly expressed, amongst other themes, the importance of the challenges faced in mountain climbing. Crucially, the type of challenges encountered were perceived by climbers as meaningful, characterised by real and potentially serious consequences, and therefore are clearly akin to the type of challenges defined by Lyng (1990) as 'edgework'. Moreover, the climbers drew attention to the high levels of focus and skill required to successfully manage the risks inherent in challenges experienced in mountain climbing: that is, characteristics clearly comparable to the concepts of both 'edgework skills' and 'edgework sensations' (Lyng, 1990). Climbers also commented on both the sense of escape achieved as a result of the heightened state of focus maintained during challenging climbing, and the exhilaration and thrill experienced as a consequence of overcoming any fears associated with the risks inherent in climbing together with the successfully management of such risks. Furthermore, many climbers went on and keenly articulated the value they attributed to this sense of escape, and the general feelings of freedom and release from everyday stresses it provided. These findings also appear to mirror elements of 'edgework' that relate to sensations concerning escape and complete immersion in an activity, in addition to feelings of exhilaration often associated with successful management of the 'edge' in an activity. Clear from the thesis's findings is the value the theoretical perspective of 'edgework' can provide to research designed to elucidate the motivational basis to mountain climbing.

6.2.4 Risk as added value

In addition to the findings presented in study 4 that supported the notion that risk operates as a means to the satisfaction of other valued motivations, the findings also appeared to indicate that the risk inherent in mountain climbing somehow enhanced the value attached to the resultant experiences. That is, climbers conveyed an increased sense of satisfaction, enjoyment, and ultimately seemed to value climbing experiences characterised by higher levels of risk more than those not characterised by risk. For example, one climber commented "When I am on a climb that really stretches my ability and I am at risk of falling and injury the buzz is even greater when I get to the top" (participant #2). The idea

that endeavours involving risk are valued more than those not involving risk has parallels with research unconcerned with mountain climbing that has focused on sources of value (Higgins, 2006). More specifically, Higgins (2006) has suggested that activities characterised by difficulty of one kind or another, if opposed, result in increases in strength of engagement. Increases in strength of engagement, in turn, are said to be associated with increases in the value attributed to the accomplishment of such activities and goals (Higgins, 2006). Although the findings reported in the final study of the thesis made a reasonable case for the idea that encounters characterised by risk were valued more than those not characterised by risk, further exploration into nature of the potential influence of risk on the value attached to resultant experiences is warranted.

However, results reported in study 3 that suggested motivation chains involving risk were not significantly related to more positive attitudes towards climbing than were motivation chains not involving risk, arguably contradict the general idea that risk increases the value attached to mountain climbing experiences. Nevertheless, due to the apparent ceiling effects in the sample's attitudes it was not possible to draw any firm conclusions concerning the relationship between risk and value. Therefore, these findings also reiterate the need for further research designed to clarify the influence of risk on value within the context of mountain climbing.

6.2.5 The evaluation and construal of risk

The varied evaluation of risk was apparent throughout the thesis. Moreover, the exclusively quantitative studies 1 and 2, alone, provided a mixed picture of the evaluation attached to the notion of risk. That is, at first glance, the predominantly negative relationships between attitudes towards a number of different types of climbing and the ratings of Risk reported in study 2 seemed to stand in contrast to the modestly significant positive relationship between Personal Risk ratings and attitudes presented study 1. However, further inspection of the results reported in study 1 suggested that the relationship between Personal Risk and attitudes was predominantly influenced by the item 'danger', and that both the 'physical pain' and 'potential injury' items were non-significantly related to attitudes. Given these mixed results, it could be argued that the different relationships between attitudes and risk

were largely due to the disparate evaluations of the qualitatively different items that loaded on the different risk components across the studies. For example, items that concerned 'risk', 'risk of injury', and 'experience of fear' featured in study 2 appeared to be consistently negatively related to attitudes, whereas the item 'danger' from study 1 was positively related to attitudes.

Additional consideration of the research findings presented here highlights further the different evaluations given to risk, and at the same time clearly reveals the diversity of meanings attached to the notion of risk. More specifically, contrary to study 2, almost without exception the findings reported in study 4 portrayed risk as a positively valued and ultimately motivating factor, variably associated with a great many meanings, different meanings related to different dimensions of risk. Nonetheless, it seems reasonable to suggest that the different approaches employed in studies 2 and 4 were, at least, partly responsible for the different results. That is, participants in study 4 were invited to comment freely on the meanings they attached specifically to the risk inherent in mountain climbing, and were thereby provided with the opportunity to evaluate and comment on any number of dimensions related to risk that came to mind. Participants in study 2, however, were required to evaluate items labelled 'risk', 'risk of injury', and 'experience of fear' in relation to different types of climbing, and thus responses were restricted to these narrow dimensions of risk. Clearly, when comparing and evaluating results of this kind it is essential to fully consider the potential influence of the different dimensions of risk being appraised. In general, the thesis's findings provide support for the argument that conventional, 'rational actor' approaches to perceptions of risk are somewhat oversimplified and shallow, and therefore fundamentally fail to address the influence of the different dimensions subsumed within the multifaceted concept of risk. That is, approaches that reduce people's perceptions of risk to estimates of the likelihood that unwanted outcomes will occur overlook the complex nature of risk.

6.2.6 Summary of the contribution of the thesis to the current understanding of the role and importance of risk in mountain climbing

Taken together, the four studies featured in the thesis contribute in a number of ways to existing knowledge concerning the role and importance of risk to participation in mountain climbing. Overall, the thesis highlights the need to consider which particular facet of risk was considered in each study before both drawing any conclusions concerning the motivational importance of risk to participation in mountain climbing, or comparing findings presented here to existing mountain-climbing related research. In relation to the current programme of research, the conceptualisations, definitions and construal of risk varied throughout the thesis, and the corresponding findings appeared to vary depending on the specific conceptualisation of risk that was appraised. That is to say, when risk was defined in terms of, for example, personal injury and the experience of fear, participants tended to evaluate risk negatively, and risk emerged as negatively related to attitudes. However, when risk was defined in terms of its relationship with increased challenge and focus, participants, on the whole, evaluated risk positively and this led to the conclusion that risk had an instrumental influence on motivations to participate in mountain climbing. Unsurprisingly then, it is necessary to conclude that it is crucial to consider closely which conceptualisation of the broad term risk that is under investigation so as to avoid inferring too much or even too little from research concerned with the complicated role of risk in mountain climbing.

Beyond issues concerning the varied conceptualisations of risk, the current thesis revealed a number of interesting findings concerning the varied importance of risk for different people and for different types of climbing. Taken as a whole, the results of the four studies revealed that for some risk was perceived as nothing other than a negative feature of this activity, a deterrent, and even for some as something to be avoided at all costs. However, for others risk performed a rather more complex role, sometimes construed as facilitating the satisfaction of other motivations, and at other times portrayed as something that enhances the overall value attributed to mountain climbing experiences. In general, the thesis's findings indicate that certain perspectives that have been applied to the study of mountain climbing, for example, a personality perspective, tend to overlook the

heterogeneity of mountain climbers by favouring an approach that assumes climbers represent a largely homogenous group of people. Undoubtedly, the current research emphasises the need to consider the varied meaning of risk for different people involved in mountain climbing.

As for the importance of risk for different types of climbing, the findings presented here were mixed. However, uniquely, the thesis does present the first comprehensive comparison of a broad and inclusive range of types of mountain climbing, something not studied until now. Overall, certain types of climbing including *deep water soloing*, *free soloing*, *ice climbing*, and *traditional climbing* were perceived as high risk compared to, for example, *aid climbing* and *sports climbing*. Nevertheless, the relationships between risk and specific types of climbing were not consistent throughout the thesis, therefore indicating the need for further research of this kind into the importance of risk for different types of climbing.

Although the present thesis was exploratory and not designed to test specific theoretical perspectives on, or models of risk, it is arguably worthwhile presenting a statement concerning the 'theory' of risk for mountain climbing that emerged throughout the programme of research. Together, the research presented indicates that, by and large, mountain climbers are not motivated by risk *per se*. Crucially, however, risk does appear to be central to people's participation in mountain climbing, facilitating the satisfaction of a number of explicitly labelled motivations for mountain climbing and enhancing the overall value attributed to mountain climbing experiences. Moreover, for some the importance placed on risk within their understanding of their motivations for mountain climbing is greater than for others, with evidence to tentatively suggest that those who place greater importance on risk favour types of climbing characterised by higher levels of risk as a means to satisfy their desire to push boundaries and test themselves further.

6.3 Limitations to the current research

Although a number of limitations to particular studies have been noted in the relevant chapters, a few additional issues together with general limits to the thesis should be

addressed. Firstly, it is worth noting that the belief items featured in study 1 were based on responses gathered in a pilot study. Therefore, it is possible that alternative beliefs salient to the participants' perceptions of their mountain climbing were not included in the analysis. Moreover, the same cautionary note applies to study 2, where the characteristic items were based on the belief items from study 1. However, although it is reasonable to suggest that the full range of beliefs salient to particular samples may not have been evaluated, the similarity between the range and content included in the free responses reported in the study 3 means-ends chains analysis and the items evaluated in both studies 1 and 2 seems to suggest that the items featured in the former two studies were typical of responses freely reported by climbers themselves.

Of potential significance is the discrepancy between the numbers of participants who identified each of the eight types of climbing as their principal type of climbing in study 2. Not only may this imbalance have resulted in overtly biased evaluations of the different types of climbing, with more favourable judgements made of the type of climbing with which each participant was affiliated, but it may also have impeded the evaluation of types of climbing of which participants had little, or no, experience. Future research focused on the characterisation of, and evaluation of differences between different types of climbing would do well to employ samples that equally represent each of the types of climbing being studied.

In general, it is important to acknowledge the need to be cautious when making any generalisations from the findings reported in the four empirical studies, or taking comparable findings from separate studies as an indication of reliability. Essentially, given earlier comments on the multidimensional nature of the concept of risk, it would be imprudent to assume that the evaluations of risk reported in each of the studies were consistently based on the same aspects and interpretations of risk.

An additional issue regarding the limits to the generalisation of the current findings concerns the nature of the samples of climbers employed in each of the studies. That is, the current samples mainly comprised climbers based in the United Kingdom, the majority of

who were members of British Mountaineering Council affiliated clubs, therefore rendering the findings discussed here applicable only to this particular population. Clearly, both United Kingdom-based climbers not belonging to a British Mountaineering Council affiliated club and those from different cultures may evaluate the element of risk intrinsic to mountain climbing differently to the samples used in the present thesis. For example, climbers not belonging to a British Mountaineering Council affiliated club may represent a group of people that do not want to belong to an organisation with guidelines and some form of structure. Arguably, climbers who decide not to join a club, and who thereby eschew the social and practical support organisations of this kind can provide, may represent a sub-population that perceive and are motivated by risk in different ways to the British Mountaineering Council affiliated club members included here. In turn, it is possible that by only including British Mountaineering Council affiliated club members that the range of scores for a variety of behavioural beliefs and outcome evaluations together with scores for attitudes and intentions may have been restricted. Undoubtedly, further research that includes a broad spectrum of climbers is needed otherwise the current findings remain relevant only to this particular climbing population. Furthermore, an additional point concerning response rates should be noted. Although in the case of the first study all 300 British Mountaineering Council affiliated club secretaries were approached, it is possible that not all of the secretaries distributed the information concerning the study as requested, and clearly given the sample size of (N = 232) not everybody approached chose to participate. Again, for both the second and third studies, undoubtedly not everybody who read the online notices for both of these studies chose to complete the surveys. In general, the possibility exists that the perceptions of, and attitudes towards risk held by individuals who either chose not to respond to the first three studies, or simply were not approached as part of these studies, may differ to those presented in the current thesis.

A final potential limitation to the current thesis concerns the use of online methodologies throughout each of the four studies presented. More specifically, although it is possible to argue that postal or in-person questionnaire distribution and completion may have yielded different findings to those obtained using online methodologies in the first three studies presented here, there is no clear evidence that either is a better method in terms of response

rate or quality of responses. However, the potential limits to the online methodologies are arguably particularly salient to the final study where interviews represent the method of choice. That is, the majority of research that has adopted an interpretative phenomenological approach has analysed data obtained through in-depth interviews (Smith & Osborn, 2003). Moreover, it has been argued by some that interviews can facilitate the gathering of interpretations characterised by greater depth, therefore providing a fuller appreciation of the experience under investigation (Brocki & Wearden, 2006). Nonetheless, in response to potential criticisms of the current use of an online data collection method, and subsequent analysis of electronically mailed responses to a specified research question, is the argument that phenomenology is historically grounded in

> "the interpretation of *texts*, which may be any material object or tangible expression imbued in some way with human meaning-for example, a public document, a personal journal, a poem, a song, a painting, a dance, a sculpture, a garden, and so forth." (Seamon, 2000).

On these grounds it is possible to defend the current method of data collection employed in the interpretative phenomenological analysis study presented here. However, speculation concerning the relative merits of analyses that result from different methods of data collection remain.

6.4 Methodological and practical implications of the current research

Longstanding debates concerning people's capacity for introspection have stressed the restricted awareness people have of the impact different thoughts and feelings have on their behaviour (Nisbett & Wilson, 1977). In view of this, the dissimilarity in the significance attributed to risk in the first three studies compared to that in the final study perhaps suggests, that people do not always have access to all of the factors that contribute to their behaviour, or that they simply choose not to report them all, or both. Certainly, it is necessary to acknowledge the methodological differences between the studies, and how those differences may have contributed to the different findings. That is, unlike the first three studies that either concerned a broad range of motivations or characteristics associated

with mountain climbing, the final study was specifically focused on the motivational meaning attached to risk, participants expressly asked to comment on the relevance of risk to their participation. Therefore, it is sensible to assume that the methodological differences between the studies were, at least, partly responsible for the different findings reported across the studies. In spite of this, another possibility is that the motivational meaning attached to the notion of risk is hard to articulate, the relationship between risk and other motivations being too complex, thus rendering it apparently ineffable. Importantly though, the contrast in the findings reported in the studies presented here also seems to hint at the potentially greater ability of qualitative approaches akin to that employed in study 4 to identify and elucidate the significance of risk to people's participation in mountain climbing. That is, the role risk plays in people's motivation for mountain climbing may not be immediately obvious, its relevance emerging more gradually, and only really becoming apparent to the participants themselves as they go through the process of responding. Fundamentally, approaches that allow for open-ended responses that provide participants with the opportunity to 'work through' their reasons appear to hold more promise for the identification of more complex motivations, such as risk. Nevertheless, as mentioned earlier, it is important to take into account the potential influence of methodological differences when drawing any conclusions about the relative benefits associated with different approaches.

In a society where safety and security are prioritised (Furedi, 1997), and people increasingly experience feelings of powerless both at work and in their personal lives, thereby contributing to a loss of any real sense of autonomy (Beck, 1992; Lupton, 1999; Lyng, 1990), mountain climbing arguably represents a socially acceptable antidote to this state of affairs. Moreover, the thesis's findings identified a sense of escape from the routines and rigour of everyday life as a clear motivation for participating in mounting climbing. Also echoed in existing research is the value activities like mountain climbing provide people who feel unsatisfied by, and overly controlled in, their daily lives (e.g., Breivik, 2007; Kane & Tucker, 2004). Importantly, though, research within the field of outdoor recreation has underscored the value specifically attached to the sense of adventure and uncertainty characteristic of the challenges encountered in mountain climbing (Ewert,

1994). Some have even suggested that increased levels of safety within climbing environments have had deleterious effect on the value attached to experiences of this kind (Ewert, 1994). It would appear that for mountain climbing to successfully provide people with meaningful and challenging experiences, something apparently absent from many people's daily lives, then the elements of uncertainty and risk traditionally characteristic of this activity need to be preserved.

6.5 Theoretical implications of the current research

The current programme of research adopted an exploratory approach to the exploration of the role and importance of risk for participation in mountain climbing. As such, although a number of theoretical approaches germane to risk-related research were outlined in the first chapter, none of these theoretical approaches formed the basis to the studies presented here. Instead, the present research employed an approach where the direction of the research was guided by the findings that emerged, and was therefore firmly grounded in the data collected from the samples studied. Thus, in practice, the findings of the thesis's first study formed the basis of the next, and these formed the basis of the next, and so on. Nevertheless, even though existing theoretical perspectives did not provide an established framework within which to interpret the resultant data and analyses, an appraisal of the thesis' findings and their implications for the existing perspectives referred to in the introductory chapter is warranted.

The thesis presented an application of the theory of planned behaviour (TPB, Ajzen, 1991) designed to evaluate participants' behavioural beliefs, attitudes and intentions towards participation in mountain climbing. The TPB has been applied to a broad array of health risk-related behaviours. As previously discussed, existing applications of the TPB have, in the main, focused on the perceptions of risk associated with health risk-related behaviours, with the appraisal of positive aspects associated with the same risk-related behaviours often overlooked (Goldberg et al., 2002). Crucially, the findings of the present thesis support previous criticisms of studies that have focused exclusively on negative attributes associated with a behaviour having identified a number of behaviour beliefs unrelated to risk (e.g., related to *challenge*) that were strongly and positively associated with attitudes

towards participating in mountain climbing. This finding alone supports existing suggestions that applications of the TPB to risk-related behaviours need to consider a variety of both positive and negative attributes associated with a given behaviour as a means to a full appreciation of the beliefs that drive behaviour (e.g., McKenna & Horswill, 2006).

The popularity of the TPB is reflected by the abundance of work that has employed this particular social cognitive model (Godin & Kok, 1996). Moreover, the model has been praised for its ability to account for impressive amounts of variance in both intentions and behaviour (see Godin & Kok, 1996). However, regardless of seemingly impressive effect sizes, the fact remains that a large proportion of variance remains unexplained by the model. Importantly, on numerous occasions it has been argued that the model would benefit from the inclusion of additional variables (e.g., Conner & Armitage, 1998). Appropriately, the findings reported throughout the thesis consistently underscored the importance participants placed on feelings of both challenge and enjoyment, therefore indicating that future applications of the TPB to mountain climbing would do well to include additional variables designed to measure these salient feelings.

Like the TPB, the psychometric paradigm (Slovic, Fischhoff, & Lichtenstein, 1980) has represented, and continues to assume, a popular position within social psychological research. Moreover, the prevalence of the application of this particular methodological approach is particularly apparent within risk-related research, the area within which the paradigm originated. However, despite the vast array of hazards that have been studied using the psychometric paradigm, mountain climbing has only been included in some of the early work of Slovic and his colleagues (Slovic et al., 1980) as part of a study that examined people's perceptions of risk in relation to ninety different potential hazards. Accepting that Slovic et al. (1980) wanted to examine a broad range of hazards, it was arguably necessary to treat mountain climbing as a single homogenous activity. Nevertheless, the present research does provide some potentially useful information in this regard given that the eight different types of climbing studied here assumed distinct positions on the Risk dimension identified. That is, although Slovic et al. (1980) chose to

treat mountain climbing as a single activity, the thesis' findings indicate that an approach of this kind may overlook some important differences between different types of climbing frequently subsumed within this broad activity, and therefore fail to accurately appraise the varied relevance of risk to these specific types of climbing.

Throughout the thesis numerous findings resonated with features of both Csikszentmihalyi's (2000) theory of 'flow' and Lyng's (1990) theory of 'edgework'. However, having fully considered instances where the current findings appeared compatible with particular psychological features characteristic of both edgework and flow (viz. immersion in one's activity), the importance of the natural environment for mountain climbing emerged. Of relevance, edgework (Lyng, 1990) expressly highlights people's feelings of unity and 'oneness' with their activity and the environment in which it takes place as a central sensation key to edgework experiences. In an arguably similar yet less obvious way, Csikszentmihalyi's (1992) emphasised the unity people feel with their activity. Beyond this however, the current research findings appear to have the potential to develop this line of thought further. That is, the connection with and immersion within the environment an activity takes place have been identified as defining characteristics of both flow experiences and edgework experiences. Nevertheless the influential role of the environment in relation to the actual occurrence of these experiences has not been made explicit, something the present findings help to do. Specifically, some of the thesis's qualitative findings referred to the need to be highly focused when mountain climbing due to the intrinsically risky nature of mountain environments together with the often unpredictable and quick changing weather that accompanies this activity. In turn, findings of this kind very tentatively hint at the idea that the mountain environment itself, and not just the physical movements, increase the likelihood of both flow and edgework experiences due to the level of focused engagement and skill required to effectively operate in this environment.

Overall, the current research appears to have a number of implications for existing related theoretical perspectives. Moreover, the issues discussed above arguably highlight several potentially useful avenues worth exploring in further related research.

6.6 Future research

Following on from the discussion of the implications of the current research for existing theoretical approaches, a number of potentially fruitful avenues for future research became apparent throughout the course of the thesis. In line with existing debates that have argued for the inclusion of supplementary variables to the TPB, future applications of this model to the study of mountain climbing would arguably benefit if additional variables specifically tailored to the measurement of feelings of both challenge and enjoyment were included. That is, feelings of challenge and enjoyment emerged as particularly important motivating variables for people's participation in mountain climbing, and therefore present potentially valuable areas to focus on in future investigations. Moreover, given longstanding suggestions that the inclusion of salient behavioural beliefs within the TPB is crucial to the resultant utility of the model (Conner & Armitage, 1998), it is perhaps advisable that future research employing this theoretical perspective is preceded by some form of qualitative data collection from a suitable sample in order not only to identify as many beliefs as possible deemed salient by this particular sample, but also to assist in the identification of beliefs that are less readily articulated.

The thesis presented the first psychometric study that has focused on a diverse selection of different types of mountain climbing. Although the current findings provided interesting preliminary information in relation to the climbers' different perceptions of the eight types of climbing studied, further research of this kind is required in order to assess the validity and reliability of these results. Of potential relevance is previous research that has revealed a number of differences in the importance placed on different motivations for climbers that had varied levels of experience and involvement in mountain climbing (e.g., Ewert, 1993, 1994). Continuing this line of investigation, it would be worthwhile to explore any further differences in the perceptions of these different types of mountain climbing dependent on climbers' level of experience.

As has been stated, the similarity between many of the findings reported in the thesis and elements key to Lyng's (1990) theory of edgework, in particular, was pronounced. It would seem that Lyng's (1990) theoretical perspective might prove particularly enlightening for

research focused on the acquisition of a deep and meaningful understanding of why people take part in mountain climbing. Moreover, given the earlier discussion of the implications of the thesis' findings for this theoretical perspective, an exploration of the potentially influential role of the environment, itself, in which mountain climbing takes place represents a potentially interesting avenue for future research. That is, the relationship between the mountain environment in particular and the incidence of edgework experiences requires further investigation. Moreover, an investigation of this kind might also benefit from comparing other environments that have been associated with edgework experiences as a means to compare and contrast the specifics of edgework experiences in different environments. For example, are there any differences between experiences of edgework in the natural environments to experiences of edgework indoors, or in built environments generally?

Further still, it is possible to draw parallels between both sociological and social psychological perspectives on risk that underscore the strictures of industrialised society and the accompanying loss of genuine feelings of autonomy (see Beck, 1992; Lupton, 1999; Lyng, 1990) and evolutionary perspectives. That is, although social psychological perspectives have pointed to societal factors that contribute to people seeking out activities that provide meaningful challenges, evolutionary perspectives have suggested hat given our evolutionary heritage we are predisposed to engage in activities characterised by risk, where survival is not guaranteed (Brievik, 2007). Accordingly, evolutionary perspectives on risk also present a potentially valuable direction for future research into motivations for mountain climbing.

Finally, as the thesis progressed, the idea of risk as a means to other valued motivational states emerged. However, in order to verify and expand upon these findings, further research, perhaps in the form of in-depth interviews is required (see Lockwood, 2011). Similarly, although the current research findings tentatively hinted at a relationship between the levels of risk encountered in experiences and the consequent value attributed to those experiences, this as well needs to be considered more fully. Also, even though the thesis was primarily concerned with the motivations reported for mountain climbing, future

research would do well to extend this line of inquiry to include analysis of which motivations best predict actual mountain climbing behaviour.

6.7 Conclusion

Taken together, the findings presented in the thesis provide an indication of the relative importance of risk to people's motivations for mountain climbing, and suggest also a number of ways in which risk is relevant to other motivations associated with this activity. Moreover, the thesis makes a novel contribution to research into this activity by providing an evaluation of the different characteristics associated with a broad range of different types of climbing, and in so doing tentatively signals which specific types of climbing might best provide the focus for further research interested in the role of risk in people's participation in this varied activity. Perhaps most significantly, the research presented in the thesis provides support for the argument that approaches which tend to appraise the importance of different motivations fail to acknowledge the rather more intertwined relationship between those motivations. That is, the influence that certain discrete motivations, in this case risk, have on participation only becomes truly apparent when considered in conjunction with other motivations. Also evident from the thesis's findings is the influence on both the dimensions of risk considered and the consequent evaluation of risk of the methodological approaches employed. Therefore, the present thesis recommends that a mixed methodology be adopted in future research into the seemingly complex role that risk plays in motivations for mountain climbing.

REFERENCES

Abelson, R. P., & Levi, A. (1985). Decision-making and decision theory. In G. Lindzey and E. Jason Aronson (Eds.), *Handbook of Social Psychology* (pp. 231-309). New York: Random House.

Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes, 50,* 179-211.

Ajzen, I., & Fishbein, M. (Eds.). (1980). *Understanding attitudes and predicting social behaviour*. New Jersey: Prentice-Hall.

Alexander, J. (1996). Critical reflections on "reflexive modernisation". *Theory, Culture, and Society, 14*, 133-138.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology, 40,* 471-499.

Bagozzi, R. P., Bergami, M., & Leone, L. (2003). Hierarchical representation of motives in goal setting. *Journal of Applied Psychology, 88*, 915-943.

Bagozzi, R. P., & Dabholkar, P. A. (1994). Consumer recycling goals and their decisions to recycle: a means-end chain analysis. *Psychology and Marketing, 11*, 313-340.

Bagozzi, R. P., & Edwards, E. A. (1998). Goal setting and goal pursuit in the regulation of body weight. *Psychology and Health, 13*, 593-621.

Bandura, A. (1977). Self-efficacy Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191-215.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W H Freeman.

Beck, U. (1992). *Risk Society: Towards a new modernity*. London: Sage Publications.

Beck, U. (1994). The reinvention of politics: towards a theory of reflexive modernization. In U. Beck, A. Giddens, and S. Lash. *Reflexive modernization: Politics, tradition and aesthetic in modern social order* (pp.1-55). Cambridge: Polity Press.

Benthin, A., Slovic, P. & Severson, H. (1993). A psychometric study of adolescent risk perception. *Journal of Adolescence, 16*, 153-168.

British Mountaineering Council Annual Report (2008). Retrieved December 4, 2009, from http://www.thebmc.co.uk/Feature.aspx?id=1422

Böhm, G. (2003). Emotional reactions to environmental risks: Consequential versus ethical evaluation. *Journal of Environmental Psychology, 23*, 199–212.

Bortolotti, L. (2009). The epistemic benefits of reason giving. *Theory and Psychology, 19*, 624-645.

Botschen, G., & Hemetsberger, A. (1998). Diagnosing means-end structures to determine the degree of potential marketing program standardization. *Journal of Business Research, 42*, 151-159.

Bradley, B. S., & Morss, J. R. (2002). Social construction in a world at risk: Towards a psychology of experience. *Theory and Psychology, 12*, 509-531.

Breakwell, G. (2007). *The psychology of risk*. Cambridge: Cambridge University Press.

Breivik, G. (1996). Personality, sensation seeking and risk taking among Everest climbers. *International Journal of Sports Psychology, 23*, 308-320.

Breivik, G. (2007). The quest for excitement and the safe society. In M. McNamee (Ed.) *Philosophy, risk and adventure sports* (pp. 10-24). Oxon: Routledge.

Brocki, J. M., & Wearden, A. J. (2006). A critical evaluation of the use of interpretative phenomenological analysis (IPA) in health psychology. *Psychology and Health, 21*, 87-108.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*, 822-848.

Bryman, A. (2006). Paradigm peace and the implications for quality. *International Journal of Social Research Methodology, 9*, 111-26.

Brymer, E., & Oades, L. G. (2009). Extreme sports: A positive transformation in courage and humility. *Journal of Humanistic Psychology, 49*, 114-126.

Burgoon, J. K., Berger, C. R., & Waldron, V. R. (2000). Mindfulness and interpersonal communication. *Journal of Social Issues, 56*, 105-127.

Cabinet Office Strategy Unit (2002). *Risk: Improving government's capability to handle risk and uncertainty*. London: HMSO.

Capozza, D., Falvo, R., Robusto, E., & Orlando, A. (2003). Beliefs about internet: Methods of elicitation and measurement. *Papers on Social Representations, 12*, 1.1-1.14.

Claeys, C., Swinnen, A., & Abeele, V. (1995). Consumers' means-end chains for "think" and "feel" products. *International Journal of Research in Marketing, 12*, 193-208.

Cohn, L., Macfarlane, S., Yanez, C., & Imai, W. (1995). Risk-perception: Differences between adolescents and adults. *Health Psychology, 14*, 217-222.

Collison, M. (1996). In search of the high life: Drugs, crime, masculinities and consumption. *British Journal of Criminology*, *36*, 428-44

Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for future research. *Journal of Applied Social Psychology, 28*, 1429-1464.

Conner M., & Norman, P. (1995). The role of social cognition models. In M. Conner and P. Norman (Eds.), *Predicting Health Behaviour* (pp.1-22). Bury St Edmunds: Open University Press.

Conner, M., Warren, R., Close, S. & Sparks, P. (1999). Alcohol consumption and the theory of planned behaviour: An examination of the cognitive mediation of past behaviour. *Journal of Applied Social Psychology, 29*, 1676-1704.

Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. *Practical assessment, research and evaluation, 10*. Retrieved October 10, 2008, from http://pareonline.net/getvn.asp?v=10&n=7

Creyer, E. H., Ross, W. T., & Evers, D. (2003). Risky recreation: An exploration of factors influencing the likelihood of participation and the effect of experience. *Leisure Studies, 22*, 239-253.

Cronin, C. (1991). Sensation seeking among mountain climbers. *Personality and Individual Differences, 12*, 653-654.

Crossley, M. (2001). Rethinking psychological approaches towards health promotion. *Psychology and Health, 16*, 161-177.

Crossley, M. (2004). Making sense of 'barebacking': gay men's narratives, unsafe sex and the 'resistance habitus'. *British Journal of Social Psychology, 43*, 225-244.

Csikszentmihalyi, (1975). *Beyond boredom and anxiety*. San Francisco: Jossy-Bass Publishers.

Csikzentmihalyi, M. (1988). The flow experience and its significance for human psychology. In M. Csikszentmihalyi and I. S. Csikszentmihalyi (Eds.), *Optimal experience: Psychological studies of flow in consciousness* (pp. 15-35). Cambridge: Cambridge University Press.

Csikszentmihalyi, M. (1992). *Flow: The psychology of happiness*. London: Rider.

Csikszentmihalyi, M. (2000). *Beyond boredom and anxiety*. San Francisco: Jossey-Bass Publishers.

Dählback, O. (1990). Personality and risk-taking. *Personality and Individual Differences, 11*, 1235-1242.

Delle Fave, A., Bassi, M., & Massimini, F. (2003). Quality of experience and risk perception in high-altitude rock climbing. *Journal of Applied Sport Psychology, 15*, 82–98.

De Vries, H., Dijkstra, M., & Kuhlman, P. (1988). Self-efficacy: The third factor besides attitude and subjective norm as a predictor of behavioural intentions. *Health Education Research, 3*, 273-282.

Dougherty, A. P. (2007). Reading water: Risk, intuition, and insight. In M. McNamee (Ed.) *Philosophy, risk and adventure sports* (pp. 94-105). Oxon: Routledge.

Ebert, P., & Robertson, S. (2007). Adventure, climbing excellence and the practice of 'bolting'. In M. McNamee (Ed.), *Philosophy, risk and adventure sports*, (pp. 56-70). Oxon: Routledge.

Edwards, W. (1992). *Utility Theories: Measurements and Applications*. Boston: Kluwer Academic Publishers.

Ewert, A. W. (1987). Risk recreation poses new management problems. *Park Science, 8*, 7-8.

Ewert, A. W. (1993). Differences in the level of motive importance based on trip outcome, experience level and group type. *Journal of Leisure Research, 25*, 335-349.

Ewert, A. W. (1994). Playing the edge: Motivation and risk taking in a high-altitude wilderness-like environment. *Environment and Behavior*, 2*6*, 3-23.

Fabrigar, L. E., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*, 272-299.

Faust, K., & Wasserman, S. (1992). Centrality and prestige: A review and synthesis. *Journal of Quantitative Anthropology, 4*, 23-78.

Feher, P., Meyers, M. C., & Skelly, W. A. (1998). Psychological profile of rock climbers: State and trait attributes. *Journal of Sport Behavior, 21*, 167-180.

Field, A. (2000). *Discovering statistics using SPSS for Windows*. Thousand Oaks CA: Sage Publications Ltd.

Finucane, M. L., Alhakami, A. S., Slovic, P., & Johnson, S. M. (2000). The affect heuristic in judgements of risk and benefit. *Journal of behavioural Decision Making, 13*, 1-17.

Fischhoff, B., Slovic, P., Lichtenstein, S., Read, S., & Combs, B. (1978). How safe is safe enough? A psychometric study of attitudes towards technological risks and benefits. *Policy Sciences, 9*, 127-152.

Fiske, S. T., & Taylor, S. E. (1991). *Social cognition* (2nd edition). New York: McGraw Hill.

Frisch, D., & Clemen, R. T. (1994). Beyond expected utility: Rethinking behavioral decision research. *Psychological Bulletin, 116*, 46-54.

Furedi, F. (1997). *Culture of fear: Risk-taking and the morality of low expectation*. London: Cassell.

Furnham, A. (2004). Personality and leisure activity: Sensation seeking and spare-time activities. In R. M. Stelmack (Ed.) *On the psychobiology of personality: Essays in honour of Marvin Zuckerman* (pp. 429-451). New York: Elsevier Science.

Gardner, G. T., & Gould, L. C. (1989). Public perceptions of the risks and benefits of technology. *Risk Analysis, 9*, 225–242.

Gerrard, M., Gibbons, F. X., Benthin, A. C., & Hessling, R. M. (1996). A longitudinal study of the reciprocal nature of risk behaviours and cognitions in adolescents: What you do shapes what you think, and vice versa. *Health Psychology, 15*, 344-354.

Gerrard, M., Gibbons, F. X., & Bushman, B. J. (1996). Relation between perceived vulnerability to HIV and precautionary sexual behaviour. *Psychological Bulletin, 119*, 390-409.

Gibbons, F. X., & Gerrard, M. (1995). Predicting young adults' health risk behaviour. *Journal of Personality and Social Psychology, 69*, 505-517.

Godin, G., & Kok, G. (1996). The theory of planned behavior: A review of its application to health-related behaviors. *American Journal of Health Promotion, 11*, 87-98.

Goldberg, J. H., Halpern-Felsher, B. L., & Millstein, S. G. (2002). Beyond invulnerability: The importance of benefits in adolescents' decision to drink alcohol. *Health Psychology, 21*, 477-484.

Gomà-i-Freixanet, M. (1991). Personality profile of subjects engaged in high physical risk sports. *Personality & Individual Differences, 12*, 1087-1093.

Gorsuch, R. L. (1990). Common factor-analysis versus component analysis - some well and little known facts. *Multivariate Behavioral Research, 25*, 33-39.

Gorsuch, R. L. (1997). Exploratory factor analysis: Its role in item analysis. *Journal of Personality Assessment, 68*, 532-560.

Greene, K., Krcmar, M., Walters, L. H., Rubin, D. L., Hale, J., & Hale, L. (2000). Targeting adolescent risk-taking behaviors: The contributions of egocentrism and sensation-seeking. *Journal of Adolescence, 23*, 439-461.

Grunert, K. G., & Grunert, S. C. (1995). Measuring subjective meaning structures by laddering method: theoretical considerations and methodological problems. *International Journal of Research Marketing, 12*, 209-225.

Gupta, R., Derevensky, J. L., & Ellenbogen, S. (2006). Personality characteristics and risk-taking tendencies among adolescent gamblers. *Canadian Journal of Behavioural Science, 38*, 201-213.

Gutman, J. (1982). A means-end chain model based on consumer categorization processes. *Journal of Marketing, 46*, 60-72.

Gutman, J. (1997). Means-end chains as goal hierarchies. *Psychology and Marketing, 14*, 545-560.

Halpern-Felsher, B. L., Millstein, S. G., Ellen, J., Adler, N., Tschann, J., & Biehl, M. (2001). The role of behavioral experience in judging risks. *Health Psychology, 20*, 120-6.

Heywood, I. (1994). Urgent dreams: Climbing, rationalization and ambivalence. *Leisure Studies, 13*, 179-194.

Higgins, E. T. (2006). Value from hedonic experience *and* engagement. *Psychological Review, 113*, 439-460.

Hinds, J. (in press). Exploring the psychological rewards of a wilderness experience: An interpretative phenomenological analysis. *The Humanistic Psychologist*.

Hinds, J., & Sparks, P. (manuscript in preparation). *Biophilia: The affective nature of human-natural environment relationships*.

Jack, S. J., & Ronan, K. R. (1998). Sensation seeking among high- and low-risk sports participants. *Personality and Individual Differences, 25*, 1063-1083.

Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly, 11*, 1-47.

Kahneman, D., & Tversky, A. (1972). Subjective probability: A judgment of representativeness. *Cognitive Psychology, 3*, 430-454.

Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review, 80,* 237-251.

Kahneman, D., Slovic, P., & Tversky, A. (1982). *Judgment under uncertainty: Heuristics and biases*. New York: Cambridge University Press.

Kane, M. J., & Tucker, H. (2004). Adventure tourism: The freedom to play with reality. *Tourist Studies, 4,* 217-234.

Kasperson, R. E. (1992). The social amplification of risk: Progress in developing an integrative framework of risk. In S. Krimsky and D. Golding (Eds.), *Social Theories of risk* (pp. 119-132). CT: Praeger.

Kiewa, J. (2001). Control over self and space in rockclimbing. *Journal of Leisure Research, 33,* 363-382.

Knoke, D., & Burt, R. S. (1982). Prominence. In R. S. Burt and M. J. Minor (Eds.), *Applied network analysis* (pp. 195-222). Beverley Hills CA: Sage.

Krein, K. (2007). Nature and risk in adventure sports. In M. McNamee (Ed.), *Philosophy, risk and adventure sports* (pp. 80-93). Oxon: Routledge.

Kühberger, A. (2002). The rationality of risky decisions: A changing message. *Theory and Psychology, 12,* 427-452.

Lai, J. C.-L., & Tao, J. (2003). Perceptions of environmental hazards in Hong Kong Chinese. *Risk Analysis, 23,* 669-684.

Langford, I. H., Marris, C., McDonald, A.-L., Goldstein, H., Rasbash, J., & O'Riordan, T. (1999). Simultaneous analysis of individual and aggregate responses in psychometric data using multilevel modelling. *Risk Analysis, 19,* 675–683

Lash, S. (1993). Reflexive modernization: The aesthetic dimension. *Theory, Culture and Society, 10,* 1-23.

Lash, S. (1994). Reflexivity and its doubles: structures, aesthetics, community. In U. Beck, A. Giddens, and S. Lash., *Reflexive modernization: Politics, tradition and aesthetic in modern social order,* (pp. 110-173). Cambridge: Polity Press.

Lawlor, K. (2003). Elusive reasons: A problem for first-person authority. *Philosophical Psychology, 16,* 549-564.

Lester, J. (2004). Spirit, identity and self in mountaineering. *Journal of Humanistic Psychology, 44,* 86-100.

Lewin, K. (1935). *A dynamic theory of personality.* New York: McGraw-Hill.

Lewin, K. (1951). Psychological effect of effort. *Psychological Bulletin, 64,* 183-190.

Lichtenstein, S., Slovic, P., Fischhoff, B., Layman, M., & Combs, B. (1978). Judged frequency of lethal events. *Journal of Experimental Psychology, 79,* 236-240.

Llewellyn, D. J., & Sanchez, X. (2008). Individual differences and risk taking in rock climbing. *Psychology of Sport and exercise, 9,* 413-426.

Llewellyn, D. J., Sanchez, X., Asghar, A., & Jones, G. (2008). Self-efficacy, risk taking and performance in rock climbing. *Personality and Individual Differences, 45,* 75-81.

Lockwood. N. (2011). An investigation into the motivational meaning attributed to the risk encountered in mountain climbing (manuscript in preparation).

Loewenstein, G. (1999). Because it is there: The challenge of mountaineering…for utility theory. *Kyklos, 52,* 315-343.

Lois, J. (2001). Peaks and valleys: The gendered emotional culture of edgework. *Gender and Society, 15*, 381-406.

Loomes, G. (2006). (How) can we value health, safety and the environment? *Journal of Economic Psychology, 27*, 713-736.

Lopes, L. L. (1991). The rhetoric of irrationality. *Theory and Psychology, 1*, 65-82.

Lupton, D. (1999). *Risk*. London: Routledge.

Lyng, S. (1990). Edgework: A social psychological analysis of voluntary risk taking. *American Journal of Sociology, 95*, 851-886.

Lyng, S. (Ed.) (2005). *Edgework: The sociology of voluntary risk taking.* New York: Routledge.

Macfarlane, R. (2004). *Mountains of the mind: A history of a fascination.* London: Granta Books.

Mallory, G. (1923). Hazards of the Alps. (1923, August 29). *New York Times.* Retrieved November 22, 2008, from http://select.nytimes.com/gst/abstract.html

Marsch, L. A., Bickel, W. K., Badger, G. J., & Kimberly, J. (2007). The anatomy of risk: A quantitative investigation into injection drug users' taxonomy of risk attitudes and perceptions. *Experimental and Clinical Psychopharmacology, 15*, 195-203.

Maslow, A. H. (1971). *The farther reaches of human nature*. Harmondsworth, England: Penguin Books Ltd.

Maxcy, S. J. (2003). Pragmatic threads in mixed methods research in the social sciences: The search for multiple modes of enquiry and the end of the philosophy of formalism. In A. Tashakkori and C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 51-89). Thousand Oaks, CA: Sage.

McIntyre, N. (1991). Why do people rockclimb? *Australian Journal of Leisure and Recreation, 1*, 33-37.

McKenna, F. P., & Horswill, M. S. (2006). Risk taking from the participant's perspective: The case of driving and accident risk. *Health Psychology, 25*, 163-170.

McNamee, M. (Ed.) (2007). *Philosophy, risk and adventure sports*. Oxon: Routledge.

Mitchell, R. G., Jr. (1983). *Mountain experience: The psychology and sociology of adventure.* Chicago: The University of Chicago Press.

Moran-Ellis, J., Alexander, V., Cronin, A., Dickinson, M., Fielding, J., Sleney, J., & Thomas, H. (2006). Triangulation and integration: Processes, claims and implications. *Qualitative Research, 6*, 45-59.

Mountain Rescue for England and Wales Incident Report (2006). Retrieved December 4, 2009, from http://www.mountain.rescue.org.uk/publications/annual-statistics-reports

Murray, C. D. (2004). An interpretative phenomenological analysis of the embodiment of artificial limbs. *Disability and Rehabilitation, 26*, 307-316.

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Cerebral reports on mental processes. *Psychological Review, 84*, 231-259.

Nyanaponika Thera. (1972). *The power of mindfulness.* San Francisco, CA: Unity Press.

Oaksford, M., & Chater, N. (1996). Rational explanation of the selection task. *Psychological Review, 103,* 381-391.

O'Connell, N. (1993). *Beyond risk: Conversations with climbers.* London: Diadem Books.

Parsons, J. T., Halkitis, P. T., Bimbi, D., & Borkowski, T. (2000). Perceptions of the benefits and cost associated with condom use and unprotected sex among late adolescent college students. *Journal of Adolescence, 23*, 377-391.

Pieters, R., Baumgartner, H., & Allen, D. (1995). A means-end chain approach to consumer goal structures. *International Journal of Research in Marketing, 12*, 227-244.

Pomfret, G. (2006). Mountaineering adventure tourists: A conceptual framework for research. *Tourism Management, 27*, 113-123.

Radder, L., & Bech-Larsen, T. (2008). Hunters' motivations and values: A South African perspective. *Human Dimensions of Wildlife, 13*, 252-262.

Reid, K., Flowers, P., & Larkin, M. (2005). Exploring lived experience. *Psychologist, 18*, 20-23.

Renn, O. (1998). Three decades of risk research: accomplishments and new challenges. *Journal of Risk Research, 1*, 49-71.

Reiss, S. (2000). A mindful approach to mental retardation. *Journal of Social Issues, 56*, 65-79.

Reynolds, T. J., Gengler, C. E., & Howard, D. J. (1995). A means-end analysis of brand persuasion through advertising. *International Journal of Research in Marketing, 12*, 257-266.

Reynolds, T. J., & Gutman, J. (1988). Laddering theory, method, analysis, and interpretation. *Journal of Advertising Research 28*, 11-31.

Ritchhart, R., & Perkins, D. N. (2000). Life in the mindful classroom: nurturing the disposition of mindfulness. *Journal of Social Issues, 56*, 27-47.

Rossi, B., & Cereatti, L. (1993). The sensation seeking in mountain athletes as assessed by Zuckerman's sensation seeking scale. *International Journal of Sport Psychology, 24*, 417-431.

Rotheram-Borus, M. J., & Koopman, C. (1991). Sexual risk behaviors, AIDS knowledge, and beliefs about AIDS among runaways. *American Journal of Public Health, 81*, 206-208.

Savage, L. J. (1954). *Foundations of statistics*. New York: Wiley.

Scottish Mountain Rescue Report (2008). Retrieved December 4, 2009, from http://www.mrcofs.org/media/download_gallery/2008IncSum.pdf

Seamon, D. (2000). A way of seeing people and place: Phenomenology in environment-behavior research. In S. Wapner, J., Demick, T. Yamamoto, and H Minami (Eds.), *Theoretical Perspectives in Environment-Behavior Research* (pp. 157-178). New York: Plenum.

Siegrist, M., Keller, C., & Kiers, H. A. L. (2005). A new look at the psychometric paradigm of perception of hazards. *Risk Analysis, 25*, 211–222.

Slanger, E., & Rudestam, K. E. (1997). Motivation and disinhibition in high risk sports: Sensation seeking and self-efficacy. *Journal of Research in Personality, 31*, 355-374.

Slovic, P. (1987). Perception of risk. *Science, 236*, 280-285.

Slovic, P. (1993). Perceived risk, trust, and democracy. *Risk Analysis, 13*, 675-682.

Slovic, P. (Eds.) (2000). *The perception of risk*. London: Earthscan.

Slovic, P., Fischhoff, B., & Lichtenstein, S. (1980). Facts and fears: Understanding perceived risk. In P. Slovic (Ed.), *The perception of risk*, (pp. 137-153). London: Earthscan.

Smith, J. A. (1996). Beyond the divide between cognition and discourse: Using interpretative phenomenological analysis in health psychology. *Psychology and Health, 11*, 261-271.

Smith, J. A. (2004). Reflecting on the development of interpretative phenomenological analysis and its contribution to qualitative research in psychology. *Qualitative Research in Psychology, 1*, 39-54.

Smith, J. A. (2007). Hermeneutics, human sciences and health: Linking theory and practice. *International Journal of Qualitative Studies on Health and Well-being, 2*, 3-11.

Smith, J. A., Jarman, M., & Osborn, M. (1999). Doing interpretative phenomenological analysis. In M. Murray and K. Chamberlain (Eds.) *Qualitative health psychology: Theories and methods*. London: Sage Publications.

Smith, J. A., & Osborn, M. (2003). Interpretative phenomenological analysis. In J. A. Smith (Ed.) *Qualitative psychology: A practical guide to research methods*. London: Sage Publications.

Smith, J. K., & Heshusius, L. (1986). Closing down the conversation: The end of the quantitative-qualitative debate among educational researchers. *Educational Researcher, 15*, 4-12.

Snyder, M. (1987). *Public appearances, private realities: The psychology of self-monitoring*. New York: W. H. Freeman Company.

Sparks, P., & Raats, M. (1998). Health promotion: Beyond risk perception and risk communication. *Risk, Decision and Policy, 3*, 261-270.

Sparks, P., & Shepherd, R. (1994). Public perceptions of the potential hazards associated with food production and food consumption: an empirical study. *Risk Analysis, 14*, 799-806.

Stebbins, R. A., (2005). *Challenging mountain nature: Risk, motive and lifestyle in three hobbyist sports.* Calgary: Detselig Enterproses Ltd.

Stephenson, M. T., Hoyle, R. H., & Palmgreen, P. (2003). Brief measures of sensation seeking for screening and large-scale surveys. *Drug Alcohol Dependency, 72*, 279-286.

Stevens, J. P. (2002). *Applied multivariate statistics for the social sciences*, (4th Edition). Mahwah NJ: Lawrence Erlbaum Associates.

Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103*, 193-210.

Thompson, M., Zanna, M., & Griffin, D. (1995). Let's not be indifferent about (attitudinal) ambivalence. In R. E. Pretty and J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 361-186). Hillsdale, NJ: Lawrence Erlbaum.

Tversky, A., & Kahneman, D. (1971). Belief in the law of small numbers. *Psychological Bulletin, 76*, 105-110.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology, 5*, 207-232.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*, 1124-31.

Van der Pligt, J. (1998). Perceived risk and vulnerability as predictors of precautionary behaviour. *British Journal of Health Psychology, 3*, 1-14.

Veludo-de-Oliveira, T. M., Ikeda, A. A., & Campomar, M. C. (2006). Laddering in the practice of marketing research: barriers and solutions. *Qualitative Market Research: An International Journal, 9*, 297-306.

von Neumann, J., & Morgenstern, O. (1947). *Theory of games and economic behaviour*. Princeton: Princeton University Press.

von Winterfeldt, D., & Edwards, W. (1986). *Decision analysis and behavioral research*. Cambridge, UK: Cambridge University Press.

Voss, R., Gruber, T., & Szmigin, I. (2007). Service quality in higher education: The role of student expectations. *Journal of Business Research, 60*, 949-959.

Walker, B. A., & Olson, J. C. (1991). Means-end chains: Connecting products with self. *Journal of Business Research, 22*, 111-118.

Wasserman, S., & Faust, K. (1994). *Social network analysis*. New York: Cambridge University Press.

Waterman, J. (2002). *The quotable climber*. Connecticut: The Lyons Press.

Weber, E. U., Blais, A., & Betz, N. E. (2002). A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviors. *Journal of Behavioral Decision Making, 15*, 263-290.

Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality & Social Psychology, 39*, 306-320.

Weinstein, N. D. (1984). 'Why it won't happen to me': Perceptions of risk factors and susceptibility. *Health Psychology, 3*, 431-457.

Weinstein, N. D., Grubb, P. D., & Vautier, J. (1986). Increasing automobile seatbelt use: An intervention emphasizing risk susceptibility. *Journal of Applied Psychology, 71*, 285-290.

Whymper, E. (2002). *Scrambles amongst the alps*. Washington: National Geographic Society.

Willig, C. (2001). *Introducing qualitative research in psychology: Adventures in theory and method*. Berkshire: Open University Press.

Willig, C. (2008). A phenomenological investigation of the experience of taking part in 'extreme sports', *Journal of Health Psychology, 13*, 690-702.

Wilson, T. D., Hodges, S. D., & LaFleur, S. J. (1995). Effects of introspecting about reasons: Inferring attitudes from accessible thoughts. *Journal of Personality and Social Psychology, 69*, 16-28.

Yardley, L. (Ed.) (1997). *Material discourses of health and illness*. London: Routledge.

Zuckerman, M. (1979a). *Sensation seeking: Beyond the optimal level of arousal*. Hillsdale, NJ: Erlbaum.

Zuckerman, M. (1979b). Sensation seeking and risk-taking. In C. E. Izard (Ed.), *Emotions in personality and psychopathology*, (pp. 163-197). New York: Plenum.

Zuckerman, M. (1994). *Behavioral expressions and biosocial bases of sensation seeking*. Cambridge: Cambridge University Press.

Zuckerman, M., & Kuhlman, D. M. (2000). Personality and risk-taking: Common biosocial factors. *Journal of Personality, 68,* 999-1029.

Appendix 2.1 Belief elicitation questionnaire

YOUR VIEWS ON MOUNTAIN CLIMBING

Firstly, thank you very much for agreeing to participate in my survey. This study will provide some preliminary information for my Doctoral research which I am undertaking at the University of Sussex. My research broadly concerns the views and experiences of individuals, like yourself, who take part in mountain climbing. Please read the instructions carefully before completing the questionnaire. Again, thank you for you help, your views will provide both invaluable and vital information needed to set up this large research project.

1. **You should complete all 4 questions presented in the short questionnaire entitled 'Your Views on Mountain Climbing'.**

2. **You should answer the questions without consulting anyone else. Please remember there are no right or wrong answers, I am simply interested in your opinions.**

3. **Please note all responses are anonymous and completely confidential.**

4. **Once you have completed the questionnaire, please return it to the stamped addressed envelope provided and post it back to me as soon as possible (and before the 8th of February).**

Thankyou!

If you have any further questions please do not hesitate to contact me on the following email address: n.c.lockwood@sussex.ac.uk

Your Views on Mountain Climbing

In order to answer the questions featured in this questionnaire it is necessary that you actively take part in mountain climbing at the current time. This research is part of a large project on people's views and experiences concerning mountain climbing. The questionnaire is completely anonymous: your name is not required. Please answer each question carefully and honestly – there are no right or wrong answers, it is purely ***your*** personal opinion that we are interested in. Questions are arranged on both sides of the sheet of paper.

1. Please list below what motivates *you* to participate in mountain climbing.

2. Please list below as many other positive things as you can that *you* associate with *you* mountain climbing.

3. Please list below as many negative things as you can that *you* associate with *you* mountain climbing.

4. Please list below any other reasons *you* have for participating in mountain climbing.

5. Please feel free to make any additional related comments that you want to in the space below.

Please check to ensure that you have completed all the questions – <u>this is very important.</u> Please return the completed questionnaire to the stamped addressed envelope and post it back to me as soon as possible.

Your co-operation and assistance with this study is greatly appreciated!

Appendix 2.2 Study 1: Attitudes towards mountain climbing questionnaire

Attitudes towards mountain climbing

Thank you very much for agreeing to participate in this research. This short questionnaire is concerned with your views about your participation in mountain climbing. This is an independent piece of research being carried out at the University of Sussex, England. The questionnaire is completely anonymous: your name is not required. Please answer each question carefully and honestly (for each question, please click on the box that best represents your opinion). When you reach the end of the questionnaire, please check to ensure that you have completed all the questions (this is very important).

1. Please indicate how long have you been participating in mountain climbing: ☐ years

2. Please indicate your gender: Male: ○ Female: ○

3. Please indicate your age: ☐ years

4. Please indicate your nationality: ☐

Please click here to continue

Please scroll down and answer all items

5. “My participating in mountain climbing in the future will…	extremely unlikely	quite unlikely	slightly unlikely	neither	slightly likely	quite likely	extremely likely
a) …be physically challenging”	○	○	○	○	○	○	○
b) …improve my fitness”	○	○	○	○	○	○	○
c) …give me a sense of achievement”	○	○	○	○	○	○	○
d) …give me a sense of satisfaction”	○	○	○	○	○	○	○
e) …provide me with an opportunity for adventure”	○	○	○	○	○	○	○
f) …improve my mental focus”	○	○	○	○	○	○	○
g) …develop my presence of mind”	○	○	○	○	○	○	○
h) …give me the chance to take risks”	○	○	○	○	○	○	○
i) …allow me to get closer to nature”	○	○	○	○	○	○	○
j) …mean that I get to visit beautiful, wild places”	○	○	○	○	○	○	○
k) …be socially enjoyable”	○	○	○	○	○	○	○
l) …allow me to escape the routine of everyday life”	○	○	○	○	○	○	○
m) …be a spiritually enriching experience”	○	○	○	○	○	○	○
n) …give me a sense of meaning”	○	○	○	○	○	○	○
o) …give me a sense of personal unity”	○	○	○	○	○	○	○
p) …be a sensuous experience”	○	○	○	○	○	○	○

q) …give me a real buzz”	○	○	○	○	○	○	○
r) …be a euphoric experience”	○	○	○	○	○	○	○
s) …is physically painful”	○	○	○	○	○	○	○
t) …be potentially injurious”	○	○	○	○	○	○	○
u) …be dangerous”	○	○	○	○	○	○	○
v) …conflict with my personal life”	○	○	○	○	○	○	○
w) …conflict with my work commitments”	○	○	○	○	○	○	○
x) …put pressure on the natural environment”	○	○	○	○	○	○	○
y) …make me concentrate fully on the present moment”	○	○	○	○	○	○	○
	extremely unlikely	quite unlikely	slightly unlikely	neither	slightly likely	quite likely	extremely likely

Please click here to continue

6. Please indicate your personal evaluation of each of the following:

	extremely bad	quite bad	slightly bad	neither	slightly good	quite good	extremely good
a) A physical challenge	○	○	○	○	○	○	○
b) Improving my fitness	○	○	○	○	○	○	○
c) A sense of achievement	○	○	○	○	○	○	○
d) A sense of satisfaction	○	○	○	○	○	○	○
e) An opportunity for adventure	○	○	○	○	○	○	○
f) Improving my mental focus	○	○	○	○	○	○	○
g) Developing my presence of mind	○	○	○	○	○	○	○
h) The chance to take risks	○	○	○	○	○	○	○
i) Getting closer to nature	○	○	○	○	○	○	○
j) Visiting beautiful, wild places	○	○	○	○	○	○	○
k) Social enjoyment	○	○	○	○	○	○	○
l) Allowing me to escape the routine of everyday life	○	○	○	○	○	○	○
m) A spiritually enriching experience	○	○	○	○	○	○	○
n) A sense of meaning	○	○	○	○	○	○	○
o) A sense of personal unity	○	○	○	○	○	○	○
p) A sensuous experience	○	○	○	○	○	○	○
q) A real buzz	○	○	○	○	○	○	○
r) A euphoric experience	○	○	○	○	○	○	○

s) Physical pain	○	○	○	○	○	○	○
t) Potential injury	○	○	○	○	○	○	○
u) Danger	○	○	○	○	○	○	○
v) Conflict with my personal life	○	○	○	○	○	○	○
w) Conflict with my work commitments	○	○	○	○	○	○	○
x) Pressure on the natural environment	○	○	○	○	○	○	○
y) Concentrating fully on the present moment	○	○	○	○	○	○	○
	extremely bad	quite bad	slightly bad	neither	slightly good	quite good	extremely good

Please click here to continue

7. “I shall try to participate in mountain climbing in the future”						
○	○	○	○	○	○	○
definitely shall not try						definitely shall try

8. How much control do you have over whether you do or do not participate in mountain climbing in the future?						
○	○	○	○	○	○	○
no control						complete control

9(a). “My attitude towards my participating in mountain climbing in the future is …”						
○	○	○	○	○	○	○
not at all positive	slightly positive	moderately positive	quite positive	very positive	highly positive	extremely positive

Please click here to continue

9(b). “My attitude towards my participating in mountain climbing in the future is …”						
○	○	○	○	○	○	○
not at all favourable	slightly favourable	moderately favourable	quite favourable	very favourable	highly favourable	extremely favourable

10. “It is mostly up to me whether or not I participate in mountain climbing in the future”						
○	○	○	○	○	○	○
strongly disagree	moderately disagree	slightly disagree	neither	slightly agree	moderately agree	strongly agree

11. “I shall make an effort to participate in mountain climbing in the future”						
○	○	○	○	○	○	○
definitely false						definitely true

12. “I intend to participate in mountain climbing in the future”						
○	○	○	○	○	○	○
definitely do not						definitely do

Please click here to continue

13. “For me, participating in mountain climbing in the future would be…”

not at all good	○	○	○	○	○	○	○	extremely good
not at all beneficial	○	○	○	○	○	○	○	extremely beneficial
not at all wise	○	○	○	○	○	○	○	extremely wise
not at all pleasant	○	○	○	○	○	○	○	extremely pleasant
not at all enjoyable	○	○	○	○	○	○	○	extremely enjoyable

14. For a moment consider only the negative things about you participating in mountain climbing in the future and ignore any positive things about it. Please rate how negative those negative things are.

○	○	○	○	○
not at all negative	slightly negative	quite negative	very negative	extremely negative

Please click here to continue

15. “Most people who are important to me probably think that I should participate in mountain climbing in the future”						
○	○	○	○	○	○	○
strongly disagree	moderately disagree	slightly disagree	neither	slightly agree	moderately agree	strongly agree

16. “If I were to participate in mountain climbing in the future, most people who are important to me would probably…”						
○	○	○	○	○	○	○
disapprove strongly	disapprove moderately	Disapprove slightly	neither	approve slightly	approve moderately	strongly agree

17. For a moment consider only the positive things about you participating in mountain climbing in the future and ignore any negative things about it. Please rate how positive those positive things are.

not at all positive	slightly positive	quite positive	very positive	extremely positive

Please click here to continue

18. “I have mixed feelings about participating in mountain climbing in the future”						
strongly disagree	moderately disagree	Slightly disagree	neither	slightly agree	moderately agree	strongly agree

19. Please indicate the number of days on which you intend to go mountain climbing in the next six months: ____ days

20. Please indicate the degree to which the following factors motivate you to participate in mountain climbing: (Please scroll down and answer all items)

	not at all motivating for me	slightly motivating for me	moderately motivating for me	quite motivating for me	very motivating for me	highly motivating for me	extremely motivating for me
a) A physical challenge	○	○	○	○	○	○	○
b) Improving my fitness	○	○	○	○	○	○	○
c) A sense of achievement	○	○	○	○	○	○	○
d) A sense of satisfaction	○	○	○	○	○	○	○
e) An opportunity for adventure	○	○	○	○	○	○	○
f) Improving my mental focus	○	○	○	○	○	○	○
g) Developing my presence of mind	○	○	○	○	○	○	○
h) The chance to take risks	○	○	○	○	○	○	○
i) Getting closer to nature	○	○	○	○	○	○	○
j) Visiting beautiful, wild places	○	○	○	○	○	○	○
k) Social enjoyment	○	○	○	○	○	○	○
l) Allowing me to escape the routine of everyday life	○	○	○	○	○	○	○
m) A spiritually enriching experience	○	○	○	○	○	○	○
n) A sense of meaning	○	○	○	○	○	○	○
o) A sense of personal	○	○	○	○	○	○	○

unity							
p) A sensuous experience	○	○	○	○	○	○	○
q) A real buzz	○	○	○	○	○	○	○
r) A euphoric experience	○	○	○	○	○	○	○
s) Physical pain	○	○	○	○	○	○	○
t) Potential injury	○	○	○	○	○	○	○
u) Danger	○	○	○	○	○	○	○
v) Conflict with my personal life	○	○	○	○	○	○	○
w) Conflict with my work commitments	○	○	○	○	○	○	○
x) Pressure on the natural environment	○	○	○	○	○	○	○
y) Concentrating fully on the present moment	○	○	○	○	○	○	○
	not at all motivating for me	slightly motivating for me	moderately motivating for me	quite motivating for me	very motivating for me	highly motivating for me	extremely motivating for me

Please click here to continue

21. Please read the following statements carefully and indicate the extent to which you agree or disagree with each:

“When I am mountain climbing…

a) …I feel completely focused on the present moment”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

b) …I experience a heightened sense of awareness in relation to the moment-to-moment details of my immediate surroundings and actions”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	Slightly disagree	neither	slightly agree	strongly agree	very strongly agree

c) …I find my mind wanders”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

Please click here to continue

d) …thoughts concerning other aspects of my life pop into my mind making it hard for me to concentrate”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

e) …I feel completely immersed in my actions”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

f) …my movements tend to flow easily to the point that I feel completely unified with my activity”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

Please click here to continue

g) …I am easily distracted by unrelated thoughts that disrupt my actions”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

h) …I feel highly alert”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

i) …I find myself reflecting on my life at exactly the same as I am actively climbing”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

Please click here to continue

j) …I experience an overwhelming sense of undivided attention”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

k) …I am simultaneously aware of both my internal bodily states and the immediate external environment”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

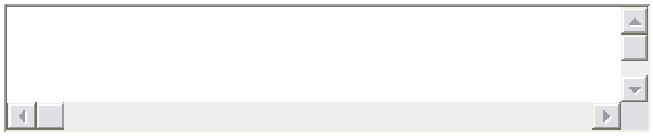
l) …I experience a sense of focused fusion with my activity”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

Please click here to continue

m)…I feel very wakeful”						
○	○	○	○	○	○	○
very strongly disagree	strongly disagree	slightly disagree	neither	slightly agree	strongly agree	very strongly agree

22. Please feel free to make any comments or suggestions in the box below. Any additional information is always very welcome!

23. If you would like to participate in future related studies please provide your email address, or alternative contact details in the space provided below.



Please click here to continue

Thank you for completing this questionnaire.

Please check to ensure that you have answered all of the questions, then click the Submit button below to send your responses. Your assistance with this research is very much appreciated.

Submit

Appendix 3.1 Study 2: Descriptions of the different types of climbing

Descriptions of the different types of climbing.

Scrambling: Scrambling is an activity that incorporates elements of both hill-walking and easy climbing. It is a way of ascending rock faces and ridges that involves using hands for balance, and occasionally the assistance of a rope. However, routes that involve the use of hands to hold body weight, or persistent use of a rope qualify as climbing.

Bouldering: Bouldering is a type of climbing undertaken on boulders that either stand alone, or are features at the base of larger rock faces. Typically, this type of climbing does not require the use of a rope and is restricted to route that do not exceed a few metres in height thus minimising the likelihood of any serious injuries. However, the use of crash pads/ bouldering mats and a spotter (person on the ground ready to prevent a person landing awkwardly) are common. Emphasise tends to placed on problem solving and movement and not endurance.

Aid climbing: Aid climbing refers to climbing that involves the use of protection (climbing gear) that is either already fixed on the route or placed by the climber. The climber ascends the climb by way of either hanging on, or standing on the protection. This type of climbing is usually employed to climb vertical cracks and faces where free climbing is not otherwise possible.

Traditional climbing: Traditional climbing represents the original style of unaided climbing where the climber places protection as they ascend a route. As a form of free climbing placed protection is only employed to catch the climber in the case of a fall. Usually routes climbed in this style are not rehearsed and emphasis is placed on route finding and gear placement.

Sports climbing: Sports climbing is another form of free climbing where the climber relies on the efforts of their limbs to ascend a route. However, distinct from traditional free climbing the main form of protection, bolts, are pre-placed thus placing more emphasis on movement, strength and endurance and almost completely eliminate the need to route-find and place protection.

Ice climbing: Ice climbing is a type of climbing that by definition takes place on icefalls, frozen waterfalls, and rock faces covered in ice. Whilst like all categories of

climbing it can vary in severity, in this instance ice climbing should be taken as climbing that necessitates the use of crampons and ice axes, together with usual rope and harness, to enable the ascent of steep ice formations.

Free soloing: Free soling is a form of climbing where the climber uses no hardware, such as ropes, harness, or any other gear. Also, by definition it is form of climbing that is undertaken without the support of a partner. Climbs of twenty feet or above, where a fall would result in serious, or potentially fatal injuries qualify as free soloing.

Deep water soloing: Deep water soloing is a type of climbing where individuals climb routes where there is water at the base of a climb. The water is supposed to serve as a potential form of protection in the event of a fall. No other hardware, such as ropes, harness, or any other protective gear is used. Obviously tide information and rock formations beneath the water level present additional things the climber has to consider in relation to potential falls.

Appendix 3.2 Study 2: Your attitudes towards different types of climbing questionnaire

Your attitudes towards different types of climbing

Thank you for agreeing to complete this questionnaire. In the questionnaire, you will simply be required to indicate your attitude towards eight different types of climbing and then give various ratings of each type of climbing. The types of climbing are: *scrambling, bouldering, aid climbing, traditional climbing, sports climbing, ice climbing, free soloing, and deep water soloing*. Brief definitions of each of the types of climbing are provided, and it is possible to scroll back to these if you wish to while completing the questionnaire. This is an independent piece of research being carried out at the University of Sussex. Your responses will be absolutely confidential and anonymous: your name is not required.

Whether you have experience of each of the types of climbing is unimportant to the purposes of this study. You may, or may not, participate in one or more of the types of climbing described.

For each question, please click in the box that best represents your answer. When you reach the end of the questionnaire, please check to ensure that you have answered ALL the questions. This is very important! (Please note that your questionnaire cannot be submitted if any of the questions are left unanswered). After you have completed the questionnaire, please click on *submit*. This too is very important!

Thank you again for taking part. Your participation is very much appreciated!

Please click here to continue

1. Please indicate your age ____ years

2. Please click in the circle that represents your gender: female ○ male ○

3. Please indicate the number of years you have been climbing ____ years

4. Please indicate your nationality ____

Definitions of the eight different types of climbing:

Scrambling: Scrambling is an activity that incorporates elements of both hill-walking and easy climbing. It is a way of ascending rock faces and ridges that involves using hands for balance, and occasionally the assistance of a rope. However, routes that involve the use of hands to hold body weight, or persistent use of a rope qualify as climbing.

Bouldering: Bouldering is a type of climbing undertaken on boulders that either stand alone, or are features at the base of larger rock faces. Typically, this type of climbing does not require the use of a rope and is restricted to routes that do not exceed a few metres in height thus minimising the likelihood of any serious injuries. However, the use of crash pads/ bouldering mats and a spotter (person on the ground ready to prevent a person landing awkwardly) are common. Emphasis tends to be placed on problem solving and movement rather than endurance.

Aid climbing: Aid climbing refers to climbing that involves the use of protection (climbing gear) that is either already fixed on the route or placed by the climber. The climber ascends the climb by way of either hanging on, or standing on the protection. This type of climbing is usually employed to climb vertical cracks and faces where free climbing is not otherwise possible.

Traditional climbing: Traditional climbing represents the original style of unaided climbing where the climber places protection as they ascend a route. As a form of free climbing placed protection is only employed to catch the climber in the case of a fall. Usually routes climbed in this style are not rehearsed and emphasis is placed on route finding and gear placement.

Sports climbing: Sports climbing is another form of free climbing where the climber relies on the efforts of their limbs to ascend a route. However, distinct from traditional free climbing the main form of protection, viz. bolts, are pre-placed thus putting more emphasis on movement, strength and endurance and almost completely eliminating the need to route-find and place protection.

Ice climbing: Ice climbing is a type of climbing that takes place on icefalls, frozen waterfalls, and rock faces covered in ice. Whilst like all categories of climbing it can vary in severity, ice climbing should be taken as climbing that necessitates the use of crampons and ice axes, together with usual rope and harness, to enable the ascent of steep ice formations.

Free soloing: Free soloing is a form of climbing where the climber uses no hardware, such as ropes, harness, or any other gear. Also, it is a form of climbing that is undertaken without the support of a partner. Climbs of twenty feet or above, where a fall would result in serious, or potentially fatal, injuries qualify as free soloing.

Deep water soloing: Deep water soloing is a type of climbing where individuals climb routes where there is water at the base of a climb. The water is supposed to serve as a potential form of protection in the event of a fall. No hardware, such as ropes, harness, or any other protective gear is used, and the climbs are undertaken alone. Tide information and rock formations beneath the water level present additional things the climber has to consider in relation to potential falls.

Please click here to continue

5. Please indicate approximately on how many days a year you participate in each of the following types of climbing:

Scrambling ____ days

Bouldering ____ days

Aid climbing ____ days

Traditional climbing ____ days

Sports climbing ____ days

Ice climbing ____ days

Free soloing ____ days

Deep water soloing ____ days

6. "My attitude towards my participating in each of the following types of climbing in the future is…"

	not at all positive	*slightly positive*	*moderately positive*	*quite positive*	*highly positive*	*very positive*	*extremely positive*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all positive	*slightly positive*	*moderately positive*	*quite positive*	*highly positive*	*very positive*	*extremely positive*

Your answers to the questions presented below should reflect your immediate associations with the types of climbing themselves, not necessarily your personal experiences of them.

7. To what extent do you associate each of the following types of climbing with the *risk of injury*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

8. To what extent do you associate each of the following types of climbing with *challenge*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

9. To what extent do you associate each of the following types of climbing with *fitness*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

Please click here to continue

10. To what extent do you associate each of the following types of climbing with *risk*?

	not at all risky	*very slightly risky*	*slightly risky*	*moderately risky*	*highly risky*	*very highly risky*	*extremely risky*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all risky	*very slightly risky*	*slightly risky*	*moderately risky*	*highly risky*	*very highly risky*	*extremely risky*

11. To what extent do you associate each of the following types of climbing with *skill*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

12. To what extent do you associate each of the following types of climbing with *enjoyment*?

	not at all enjoyable	*very slightly enjoyable*	*slightly enjoyable*	*moderately enjoyable*	*highly enjoyable*	*very highly enjoyable*	*extremely enjoyable*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all enjoyable	*very slightly enjoyable*	*slightly enjoyable*	*moderately enjoyable*	*highly enjoyable*	*very highly enjoyable*	*extremely enjoyable*

13. To what extent do you associate each of the following types of climbing with the experience of *fear*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

Please click here to continue

14. To what extent do you associate each of the following types of climbing with *excitement*

	not at all exciting	*very slightly exciting*	*slightly exciting*	*moderately exciting*	*highly exciting*	*very highly exciting*	*extremely exciting*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all exciting	*very slightly exciting*	*slightly exciting*	*moderately exciting*	*highly exciting*	*very highly exciting*	*extremely exciting*

15. To what extent do you associate each of the following types of climbing with *focused attention*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

16. To what extent do you associate each of the following types of climbing with the opportunity to *escape*

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

17. To what extent do you associate each of the following types of climbing with the opportunity to get *a different perspective on life*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

Please click here to continue

18. To what extent do you associate each of the following types of climbing with *getting in touch with the natural environment*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

19. To what extent do you associate each of the following types of climbing with *socialising*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

20. To what extent do you associate each of the following types of climbing with *self-development*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

21. To what extent do you associate each of the following types of climbing with an *ineffable quality (i.e., an experience that is difficult to put into words)*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

Please click here to continue

22. To what extent do you associate each of the following types of climbing with *conflict with personal or work commitments*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

23. To what extent do you associate each of the following types of climbing with giving the participants *a sense of who they are*?

	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*
Scrambling	○	○	○	○	○	○	○
Bouldering	○	○	○	○	○	○	○
Aid climbing	○	○	○	○	○	○	○
Traditional climbing	○	○	○	○	○	○	○
Sports climbing	○	○	○	○	○	○	○
Ice climbing	○	○	○	○	○	○	○
Free soloing	○	○	○	○	○	○	○
Deep water soloing	○	○	○	○	○	○	○
	not at all	*to a very slight extent*	*to a slight extent*	*to a moderate extent*	*to a great extent*	*to a very great extent*	*to an extremely great extent*

24. Please feel free to make any comments or suggestions in the box below. Any additional information is always very welcome!

25. If you would like to participate in future related studies please provide your email address, or alternative contact details in the space provided below.

Please select the organisation you wish to receive a donation in return for your participation in this study (Please only click on ONE). Each organisation will receive a representative proportion of £200 calculated according to all participants' selections. If you wish to find out more about any of the organisations listed below please follow the corresponding link(s).

- The British Mountaineering Council (http://www.thebmc.co.uk/)
- The Mountaineering Council of Scotland (http://www.mountaineering-scotland.org.uk/)
- The Mountaineering Council of Ireland (http://www.mountaineering.ie/)
- Mountain Rescue Council (England & Wales) (http://www.mountain.rescue.org.uk/)
- Mountain Rescue Committee (Scotland) (http://www.mrcofs.org/)
- Irish Mountain Rescue Association (http://www.mountainrescue.ie/)
- The Himalayan Trust UK (http://www.himalayantrust.co.uk/)
- Community Action Nepal (http://www.canepal.org.uk/)

Thank you for completing this questionnaire (please check to ensure that you have answered all of the questions). Your assistance with this research is very much appreciated. If you wish to contact me regarding the study please email me at n.c.lockwood@sussex.ac.uk

Please click the Submit button to send us your responses:

Submit

Appendix 3.3 Study 2: Individual principal components analyses for each type of climbing

Loadings for the *scrambling* principal components analysis

	Component		
Characteristics	1	2	3
Risk	**.84**		
Experience of fear	**.77**		
Risk of injury	**.76**		
Challenge	**.74**		
Skill	**.70**		
Focused attention	**.60**		.49
Fitness	**.51**		
Conflict with personal and work commitments			
Getting in touch with the natural environment		**.79**	
Sense of who they are		**.73**	
Opportunity to get a different perspective on life		**.65**	
Self-development		**.56**	.45
Opportunity to escape		**.41**[1]	
Enjoyment			**.77**
Excitement	.54		**.64**
Ineffable quality		.41	**.55**
Socialising			**.45**[2]

[1] The 'opportunity to escape' item was removed due to an improvement in the reliability score of the component with its removal.

[2] Likewise, the 'socialising' item was removed due to an improvement in the reliability score of the component with its removal.

Loadings for the *bouldering* principal components analysis

	Component		
Characteristics	1	2	3
Enjoyment	**.75**		
Excitement	**.74**		
Focused attention	**.73**		
Challenge	**.71**		
Skill	**.64**		
Fitness	**.54**		
Sense of who they are		**.81**	
Self-development		**.77**	
Opportunity to get a different perspective on life		**.64**	
Getting in touch with the natural environment		**.62**	
Opportunity to escape		**.56**	
Ineffable quality		**.53**	
Socialising		**.53**	
Conflict with personal and work commitments			
Risk			**.84**
Risk of injury			**.79**
Experience of fear			**.66**

Loadings on the *aid climbing* principal components analysis

	Component		
Characteristics	1	2	3
Sense of who they are	**.75**		
Opportunity to get a different perspective on life	**.72**		
Getting in touch with the natural environment	**.72**		
Self-development	**.68**		
Ineffable quality	**.66**		
Fitness	**.48**		
Conflict with personal and work commitments	**.44**[3]		
Risk		**.82**	
Experience of fear		**.81**	
Risk of injury		**.73**	
Challenge		**.58**	.40
Skill		**.55**	
Enjoyment			**.81**
Socialising			**.65**
Excitement		.50	**.60**
Focused attention		.52	**.58**
Opportunity to escape			**.54**

[3] The 'conflict with personal and work commitments' item was removed due to an improvement in the reliability score of the component with its removal.

Loadings on the *traditional climbing* principal components analysis

	Component		
Characteristics	1	2	3
Enjoyment	**.76**		
Excitement	**.72**		
Skill	**.67**		
Challenge	**.65**		
Focused attention	**.64**		
Opportunity to escape	**.57**		
Fitness	**.52**		.41
Self-development		**.81**	
Opportunity to get a different perspective on life		**.78**	
Sense of who they are		**.77**	
Getting in touch with the natural environment		**.64**	
Ineffable quality		**.51**	
Socialising	.42	**.44**[4]	
Risk of injury			**.79**
Risk			**.79**
Experience of fear			**.61**
Conflict with personal and work commitments			**.42**[5]

[4] The 'socialising' item was removed due to an improvement in the reliability score of the component with its removal.
[5] The 'conflict with personal and work commitments' item was removed due to an improvement in the reliability score of the component with its removal

Loadings on the *sports climbing* principal components analysis

	Component		
Characteristics	1	2	3
Focused attention	**.81**		
Skill	**.72**		
Challenge	**.69**		
Fitness	**.68**		
Enjoyment	**.66**		
Excitement	**.64**		
Socialising	**.41**[6]		
Sense of who they are		**.80**	
Self-development		**.72**	
Opportunity to get a different perspective on life		**.72**	
Getting in touch with the natural environment		**.69**	
Ineffable quality		**.63**	
Opportunity to escape		**.44**[7]	
Risk			**.88**
Risk of injury			**.86**
Experience of fear			**.70**

[6] The 'socialising' item was removed due to an improvement in the reliability score of the component with its removal.
[7] The 'opportunity to escape' item was removed due to an improvement in the reliability score of the component with its removal.

Loadings on the *ice climbing* principal components analysis

	Component		
Characteristics	1	2	3
Sense of who they are	**.80**		
Opportunity to get a different perspective on life	**.78**		
Self-development	**.71**		
Getting in touch with the natural environment	**.64**		
Ineffable quality	**.60**		
Conflict with personal and work commitments			
Enjoyment		**.71**	
Excitement		**.66**	
Opportunity to escape		**.60**	
Socialising		**.57**	
Focused attention		**.51**	.44
Challenge		**.49**	
Skill		**.49**	
Fitness			
Risk			**.83**
Risk of injury			**.76**
Experience of fear			**.70**

Loadings on the *free soloing* principal components analysis

	Component		
Characteristics	1	2	3
Experience of fear	**.74**		
Challenge	**.73**		
Skill	**.69**		
Risk	**.69**		
Fitness	**.66**		
Risk of injury	**.64**		-.42
Opportunity to get a different perspective		**.73**	
Sense of who they are		**.71**	.46
Getting in touch with the natural environment		**.67**	
Ineffable quality		**.64**	
Self-development		**.57**	
Conflict with personal and work commitments		**.56**[8]	
Enjoyment			**.70**
Excitement			**.64**
Opportunity to escape			**.58**
Focused attention			
Socialising			

[8] The 'conflict with personal and work commitments' item was removed due to an improvement in the reliability score of the component with its removal.

Loadings on the *deep water soloing* principal components analysis

	Component		
Characteristics	1	2	3
Opportunity to get a different perspective on life	**.78**		
Self-development	**.74**		
Getting in touch with the natural environment	**.74**		
Sense of who they are	**.70**		
Ineffable quality	**.67**		
Conflict with personal and work commitments	**.58**		
Excitement	**.54**	.41	
Opportunity to escape	**.48**		
Challenge		**.80**	
Skill		**.72**	
Fitness		**.68**	
Focused attention		**.65**	
Risk			**.79**
Risk of injury			**.72**
Enjoyment	.45		**-.60**[9]
Experience of fear		.57	**.58**
Socialising			**-.46**[10]

[9] The 'enjoyment' item was removed due to an improvement in the reliability score of the component with its removal, and general improvement of the coherence of the content of the component without it.

[10] Similarly, the 'social' item was removed due to further improvement in the reliability score of the component with its removal, and enhanced coherence of the content of the component without it.

Appendix 4.1 Study 3: Your personal reasons for climbing questionnaire

Your personal reasons for climbing

Thank you for agreeing to complete this questionnaire. In the questionnaire, you will simply be required to indicate your reasons for climbing. We are interested in the views of people who participate in one or more of the following climbing styles: *traditional climbing*, *winter climbing*, and *free soloing*. Your answers should relate to ONE of these climbing styles, which you will be asked to specify. Brief definitions of each of the climbing styles are provided below. This is an independent piece of research being carried out at the University of Sussex. Your answers will be absolutely confidential.

For each question, please click in the box that best represents your answer. When you reach the end of the questionnaire, please check to ensure that you have answered ALL the questions. This is very important! (Please note that your questionnaire will not be submitted if any of the questions are left unanswered).

After you have completed the questionnaire, please click on *submit*. This too is very important! Thank you again for taking part. Your participation is very much appreciated!

1. Please indicate your age ____ years

2. Please indicate your gender (please tick one): ☐ male ☐ female

Click here to continue

Climbing styles:

Traditional climbing: Traditional climbing represents the original style of unaided climbing where the climber places protection as they ascend a route. As a form of free climbing, placed protection is only employed to catch the climber in the case of a fall. Usually routes climbed in this style are not rehearsed and emphasis is placed on route finding and gear placement.

Winter climbing: In this instance, winter climbing is defined as climbing during winter conditions such as, snow, ice, and low temperatures, resulting in increased exposure. Ice climbing is included within this category. Whilst winter climbing can vary in severity, it should be interpreted as climbing that most probably necessitates the use of crampons and ice axes, together with ropes and a harness.

Free soloing: Free soloing is a form of climbing where the climber uses no hardware, such as ropes, harness, or any other gear. It is also a form of climbing that is undertaken without the support of a partner. Climbs of twenty feet or more, where a fall could result in serious or even potentially fatal injuries, qualify as free soloing.

3. Please indicate your principal climbing style (please tick one): ☐ traditional climbing ☐ winter climbing ☐ free soloing

4. Please indicate how long you have been participating in your principal climbing style _____ years

5. How often, on average, do you go climbing? _____

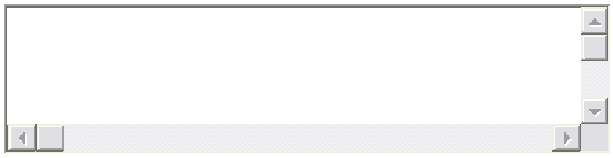
6. Please list your personal reasons for participating in your principal climbing style (i.e. the principal climbing style you indicated in response to question 3) in boxes 1-5 below.

Reason 1:

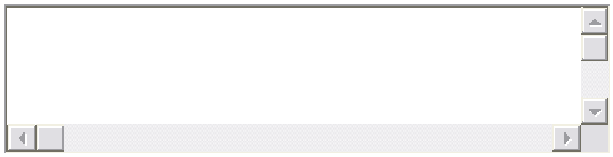
Reason 2:

Reason 3:

Reason 4:

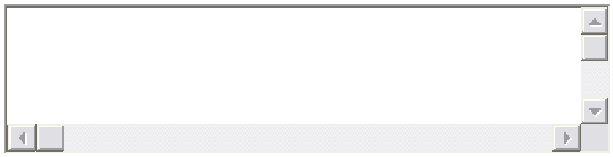


Reason 5:



7. Please indicate why reason 1 is important to you in box (1a) below.

1a:



8. Please indicate why the reason(s) you have mentioned in box (1a) is important to you, and place your answer in box (1b) below (you can scroll up and down to view your answers to previous questions).

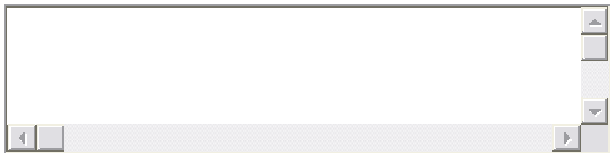
1b:

9. Please indicate why reason 2 is important to you in box (2a) below.

2a:

10. Please indicate why the reason(s) you have mentioned in box (2a) is important to you, and place your answer in box (2b) below.

2b:



11. Please indicate why reason 3 is important to you in box (3a) below.

3a:

12. Please indicate why the reason(s) you have mentioned in box (3a) is important to you, and place your answer in box (3b) below.

3b:

13. Please indicate why reason 4 is important to you in box (4a) below.

4a:

14. Please indicate why the reason(s) you have mentioned in box (4a) is important to you, and place your answer in box (4b) below.

4b:

15. Please indicate why reason 5 is important to you in box (5a) below.

5a:

16. Please indicate why the reason(s) you have mentioned in box (5a) is important to you, and place your answer in box (5b) below.

5b:

Click here to continue

17.

"My attitude towards participating in my principal climbing style is..."						
○	○	○	○	○	○	○
extremely negative	quite negative	slightly negative	neither	slightly positive	quite positive	extremely positive

18.

"It is mostly up to me whether or not I participate in my principal climbing style"						
○	○	○	○	○	○	○
strongly disagree	moderately disagree	slightly disagree	neither	slightly agree	moderately agree	strongly agree

19.

"Most people who are important to me probably think I should participate in my principal climbing style "						
○	○	○	○	○	○	○
strongly disagree	moderately disagree	slightly disagree	neither	slightly agree	moderately agree	strongly agree

20.

"I would like to explore strange places"				
○	○	○	○	○
strongly disagree	slightly disagree	neither	slightly agree	strongly agree

21.

"For me, participating in my principal climbing style is …" (Please click on one box for each row.)								
extremely bad	○	○	○	○	○	○	○	extremely good
extremely harmful	○	○	○	○	○	○	○	extremely beneficial
extremely foolish	○	○	○	○	○	○	○	extremely wise
extremely unpleasant	○	○	○	○	○	○	○	extremely pleasant
extremely unenjoyable	○	○	○	○	○	○	○	extremely enjoyable

Click here to continue

22.

How often do you do dangerous thing for fun?				
○	○	○	○	○
not at all				very often

23.

"I intend to participate in my principal climbing style in the next month "						
○	○	○	○	○	○	○
strongly disagree	moderately disagree	slightly disagree	neither	slightly agree	moderately agree	strongly agree

24.

"I like to do frightening things "				
○	○	○	○	○
strongly disagree	slightly disagree	neither	slightly agree	strongly agree

25.

"If I were to participate in my principal climbing style, most people who are important to me would probably... "						
○	○	○	○	○	○	○
disapprove strongly	disapprove moderately	disapprove slightly	neither	approve slightly	approve moderately	approve strongly

26.

For a moment consider only the **positive** things about participating in your principal climbing style. Please rate how positive those positive things are.				
○	○	○	○	○
not at all positive	slightly positive	quite positive	very positive	extremely positive

27.

How often do you do exciting things, even if they are dangerous?				
○	○	○	○	○
not at all				very often

Click here to continue

28.

How much control do you have over whether or not you participate in your principal climbing style?						
○	○	○	○	○	○	○
no control						complete control

29.

"I shall make an effort to participate in my principal climbing style in the next month "						
○	○	○	○	○	○	○
definitely false						definitely true

30.

For a moment consider only the **negative** things about participating in your principal climbing style. Please rate how negative those negative things are.				
○	○	○	○	○
not at all negative	slightly negative	quite negative	very negative	extremely negative

31.

"I like new and exciting experiences, even if I have to break the rules "				
○	○	○	○	○
strongly disagree	slightly disagree	neither	slightly agree	strongly agree

32.

"I shall try to participate in my principal climbing style in the next month "						
○	○	○	○	○	○	○
definitely shall not try						definitely shall try

Click here to continue

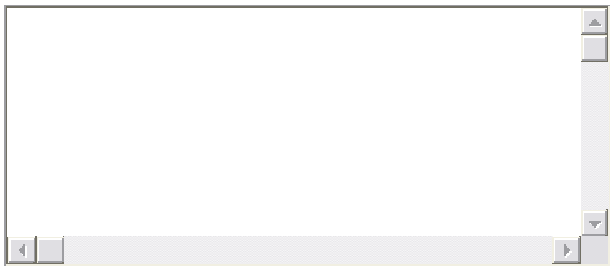
33.

"I both want **and** do not want to participate in my principal climbing style "						
○	○	○	○	○	○	○
strongly disagree	moderately disagree	slightly disagree	neither	slightly agree	moderately agree	strongly agree

34.

"I prefer friends who are exciting and unpredictable "				
○	○	○	○	○
strongly disagree	slightly disagree	neither	slightly agree	strongly agree

35. Please feel free to provide any additional comments concerning your thoughts and feelings towards your participation in climbing, or anything you feel may be relevant, in the box below.



36. It would be greatly appreciated if you would provide an email address so that a very brief second questionnaire, requiring less then five minutes of your time, can be forwarded to you. The email address will be used for the sole purpose of forwarding the second questionnaire to you and for no other reason. The email address will NOT be disclosed to anyone else. Once the study has been completed, all records of email addresses will be destroyed.

Thank you for completing this questionnaire (please check to ensure that you have answered all of the questions). Your assistance with this research is very much appreciated. If you wish to contact me regarding the study please email me at n.c.lockwood@sussex.ac.uk

Submit

Appendix 4.2 Study 3: Illustrative examples of qualitative responses by category with participant identifier.

Challenge (physical, psychological, strategic, problem-solving):
#3. "Setting a challenge and completing it".
#4. "Psychological challenge, I do my best work shaking in my boots. Over coming the tremendous challenges in the alpine environment is self gratifying".
#14. "Physical challenge".
#28. "To see how far I can push myself".
#29. "Logistical challenge".
#30. "Every trip out is different and serves to keep the brain working on the real problems. Continuous work in the office dulls the vision of what could be…"
#36. "Testing my physical ability to the limits".
#45. "I really enjoy the challenge of climbing a route, placing my own gear knowing that its all my responsibility".
#60. "It requires I figure out several different puzzles at the same time. What gear to put where and how to actually climb the rock".
#196. "The physical challenge – being out in the mountains in the winter, the walk in, the 20kg rucksack, the bad weather, the climbing. Everyday no matter what you end up climbing is a physical challenge which leaves me tired, weatherbeaten and intensely satified".

Achievement (accomplishment, mastery, aptitude, ability, productivity/ efficiency):
#9. "Sense of achievement".
#11. "I like to think after a day of climbing, that I have achieved something".
#11. "I find that the gear that I have to carry whilst traditionally climbing negatively affects my movement and I may struggle to reach or even see crucial holds, this is why soloing appeals to me as I am able to climb small routes to the best of my ability and achieve more".
#23. "To increase my climbing skills and to see improvement as I climb more.
#38. "Because it is nice to be good at something".

#48. “Tangible and concrete achievements appeal to me most, especially where they require and variety of skills and ability”.
#85. “Learn something new”.
#90. “The sense of accomplishment and adventure”.
#105. “I have been climbing for my entire life. If there was no room for improvement, then I might get bored”.
#121. “There is nothing better than not thinking you are going to get up something which you are on sighting, to then find your self pull over the top out thinking, or shouting YES!!!”

Psychological well-being (satisfaction, enjoyment, fun, relaxation, happiness, meaning, spiritual resonance):
#9. “Enjoyment”.
#16. “Provides relaxation”.
#33. “It feels like poetry to hear the silence and the sounds of climbing. When I am outside I feel very spiritual and closer to God, as I understand God to be”.
#36. “Because it makes me feel peaceful.”
#54. “I enjoy the difficult situations I put myself in, often afterwards though”.
#121. “Therapy, need that level of physical activity to keep my sanity”.
#123. “I don’t know, ask a biologist what chemicals ‘satisfaction’ releases and why we’ve evolved to enjoy the sensation of them being released. I like satisfaction, it feels nice”.
#140. “Fun”.
#143. “The movement over rock or ice, both roped and unroped, with or without a partner, is enjoyable to me”.
#193. “It gives me a balanced lifestyle”.

Self-esteem (self-worth, ego, self-development, awareness of self):
#4. “Self sufficient and independent gives a sense of self worth”.
#29. “Getting the most out of life, minimising regrets, understanding myself”.
#33. “It is good for my self esteem. I am proud of my achievements however small they might be”.

#46. “Having a good body image makes me feel better about myself (again) and so does being physically fit.
#51. “Helps improve self-confidence”.
#80. “If you succeed in doing anything in life which you aren’t sure you are capable of, you learn something about yourself. Equally you learn if you fail, to move on”.
#111. “Makes you a stronger person not relying on other people to do everything for you”.
#135. “Fewer people climb trad than sport and bouldering. It gives me something hold above all the youngsters who climb far harder than I do. I suppose my reason 5 might be better explained with one word: ego”.
#177. “This is positive for my ego and for social standing though one tries not to be too driven by these things…”.
#219. “depression can ruin my life/ self-esteem/ confidence. All areas of my life are affected by it. Climbing really takes the edge of these bad feelings”.

Identity (self, known as a climber, climbing partner/ partnership, climbing community):
#9. “Because it makes me the person I am”.
#29. “It helps to define oneself and give purpose to the more mundane aspects of life”.
#57. “It attracts a different group of people to most other sports”.
#88. “Sense of community and belonging when out with friends”.
#108. “Climbers are similar people. I don’t think I’ve ever found many who are not alike. We have weird similar cliché kind of standing. Climbers are generally fun and full of life, they don’t tend to let the stresses of every day life get them down. Something more important is to be done. It’s so unbelievable easy to talk to another climber if you don’t know them”.
#116. “It gives me a sense of being part of a particular community”.
#121. “I don’t see why I should have to live in a certain way just because some one else thinks it is what should be normal”.
#127. “Elitist would not be the right way of looking at it. I like having a skill that few people can do. I was never very good at football or tennis etc, however climbing was something I took to. It gave me a sense of identity, and has allowed me to make friends and

form a bond, especially with my climbing partner, that I think you can only find in one other place – The armed forces".

Escape (escape norms/ routines/ people, solitude, mind-freeing, free of responsibility, autonomy):
#3. "Freedom of the outdoors to be away from the hassle of your job".
#16. "Clears my mind".
#22. "You can go where you want and are by yourself".
#24. "To escape all other people, work, cars and pressure of modern living".
#34. "I like the solitude of the hills to an extent. I remember climbing Ben Nevis in summer and meeting hundreds of people on the top on their mobile phones calling home and saying that they were thrillseekers. No thanks!".
#59. "Peaceful and tranquil".
#141. "Escape to natural places away from urban life".
#180. "freedom and self-reliance".

Environment (aesthetic, scenery, outdoors, connection with nature, preservation of the climbing environment, exploration and adventure):
#4. "I like to find an aesthetic looking mountain with an awesome line, plan, prepare, then test myself on it".
#6. "I find crags and rock features, especially arêtes and ridges, highly attractive aesthetically".
#26. "Environment/ nature/ views/ wildlife".
#32. 2Being outside doing something in an amazing scenery".
#34. "I love the natural world. Climbing allows me to get as close to the natural world as possible without sprouting wings…".
#39. "Exploration".
#78. "Close contact with the outdoor".
#83. "Climbing gives me a getting my hands dirty feeling as well. I am more closely interacting with the environment".
#89. "Experiencing untouched nature".

#105. “Adventure”.
#133. “I think it is important to minimise the human footprint on climbs. So that we will still have beautiful clean lines left for future generations”.

Health (fitness, exercise, vitality, longevity, energy):
#10. “makes me feel alive”.
#12. “Exercise”.
#32. “With studying in the city, it can sometimes get dull, and you need something to feel alive again”.
#36. “Because I want to be fit and healthy”.
#36. “Because I wan to love a long life”.
#49. “I want to maintain my overall levels of fitness”.
#105. “Fitness”.
#143. “Keeps me physically and mentally fit”.
#179. “It is important to me (in no order of importance) for physical fitness, i.e. to achieve this, and for mental fitness (in a sense), i.e. even with both achieving the movement doesn’t necessarily always happen”.
#224. “Stress my body to exhaustion”.

Focus (flow, mindfulness, engagement, flow of movement):
#4. It just feels good to get in a rhythm and flow, clearing your mind and doing what I love!”.
#16. “Gives a focus so that I don’t have to think about anything else, aids relaxation”.
#35. “Enjoy the concentration required when climbing, and how its like a giant puzzle, working out the moves, and gear placements”.
#96. “Freedom of movement. No restrictions such as a rope, gear. Climbing flows smoothly”.
#96. “The focus is greater and the buzz is almost equivalent to a drug induced euphoria”.
#135. “Engagement. I have to do more to participate in trad climbing. It engages my mind on more levels than most other styles”.

#161. “Moving on rock forces you to focus on your body in a new way. You learn techniques which help you conserve energy and moves/ body positions to overcome technical difficulties”.
#169. “Meditative effect gained through intense concentration during the climb”.
#184. “Flow is important because it’s what all athletes seek – the chance to focus on the doing of a thing and forget everything else”.

Safety (injury avoidance, self-preservation):
#15. “It’s relatively safe fun”.
#17. “It feels like the only ‘real’ style that’s still relatively safe (as opposed to sport climbing for example, which is too safe, or free soloing, which is too dangerous for an amateur like me”.
#24. “It’s important to me because it is the safest way of participating in the sport in this area”.
#84. “I don’t want to be hurt or permanently injured or killed in a climbing accident”.
#124. “Safety”.
#141. “The primary reason for me to go (trad) climbing is to have safe adventure”.

Risk (risk, danger, control/ management of risk, uncertainty, ‘thrill of risk’ – only when specifically stated as a thrill directly associated with ‘risk’):
#10. “danger”.
#17. “I wan to be safe when climbing, but have a controllable amount of risk”.
#18. “Climbing is all about risk management. It is a problem solving activity that requires cool thinking. Also the ever present knowledge of an accident (god forbid I ever have one) and the outcome could be determined by my actions”.
#30. “The management of perceived and objective risk on a climb is an immediate problem that you have control over”.
#43. “It is knowing that I am playing a serious game with serious risks. It is the only time in normal life when I am alone and totally responsible for my life and have to personally mitigate against losing it. Worse than death would be permanent injury”.
#54. “Being in control in potentially dangerous situations – adrenaline/ excitement”.

#81. “I like the thrill and the risk”.
#133. “The removal of the unknown and the sense of exploration leave a climb feeling rather contrived in my mind. It can still be a physical challenge, but essentially becomes monkey bars for adults”.

Thrill (thrill, adventure, buzz, excitement):
#10. “Excitement”.
#38. “It helps give you adrenaline rushes, helps you learn to control your feelings, makes you feel good when you get through the fear and come out the other side”.
#49. “The adrenaline rush”.
#77. “Probably as my job lacks excitement”.
#104. “I enjoy the thrill, buzz being scared and getting to the top safely and having satisfaction of saying wow I did that”.
#116. “It is the only sport that gives me that special kick”.

Fear (experience of fear, attempts to overcome fears):
#9. “Realising fears”.
#18. “Need the fear factor to keep me going”.
#52. “Learn to cope with fear/ pressure/ danger”.
#83. “There is a certain masochistic pleasure in being scared. There’s also further sense of achievement in not only completing the climb and beating it’s physical problems but having beaten the inner demons that tell you it is not a safe thing to do”.

Social (friendship, relationships, camaraderie, family, tradition, trust):
#3. “Meeting lots of new people through climbing”.
#3. “Making some really good friends and trusting them”.
#17. “The only style I grew up with. My Father climbed in the Navy, and taught my two younger brothers and I as we were growing up”.
#23. “To socialise”.
#35. “I really enjoy the company of those people I climb with”.
#49. “Camaraderie”.

#126. “Family is what’s most important in my life, and I like having significant interactions and quality experiences with them. Climbing provides that”.

Ethics (values, authenticity):
#68. “Adhering to local climbing styles and ethical norms is the only sensible approach for free-spirited folk to behave. Its like visiting someone’s house – when under their roof you follow their rules for the most part. If you don’t like it you leave”.
#97. “Civil duty, moral responsibility”.
#118. “No trace left on the rock”.
#138. “As a fairly new climber, I feel it important to respect the ethics of this area. If I were to disagree with some of the climbing ethics, I would choose to climb elsewhere before trying to change everyone else”.
#162. “Trad climbing leaves ‘no trace’”.
#162. “I am a Buddhist and am concerned for mans correct understanding of his place in the Universe”.
#228. “’Proper’ rock-climbing, to my mind, is attractive because: it takes place outdoors, usually in at least semi-rural locations; it is physical; it poses cognitive problems; and it sets psychological challenges. Soloing provides all these components, albeit in my case, at less intensive levels”.

Other (holistic, process-orientated, accessibility, convenience, general motivation, stimulation and interest):
#4. “I think it’s the whole process that’s important”.
#11. “The weight of gear can make me tire quickly which is why O like how soloing is very light and self-reliant”.
#15. “The element of improvisation it allows”.
#41. “Doesn’t need specific weather conditions”.
#41. “Money is not infinite!”.
#78. “There is not much available else where!”.
#84. “Traditional climbing is the easiest one to learn and one I got steered into by the availability of teachers”.

#124. “Motivating”.

#204. “It is the most popular climbing style in my local area, and therefore easiest to participate in”.

#221. “Instructing for a living”.

Appendix 5.1 Study 4: Qualitative responses with participant identifier

#1.

Risk is something to be avoided through mastery. That process is at the heart of climbing; in that sense one is motivated by risk, but it's not roulette.

#2.

The importance of risk is minimal to me at this stage in my climbing life. I do not climb because it is risky, I am more interested in technique and strength and risk is an added factor I am keen to minimise. When I climb with ropes I am not afraid to take risks and fall as I feel secure and safe but I do not take unnecessary risks if I feel the risk of injury is likely. Having said that, the risk of falling motivates me to carefully consider my moves when climbing and not fall! When I am on a climb that really stretches my ability and I am at risk of falling and injury the buzz is even greater when I get to the top. This is how I develop my climbing skills but I don't climb in this way very often though!

#3.

Risk isn't my motivation - I'm not more likely to want to climb something because it's dangerous, nor am I going to not climb something because it's "too safe". To me, risk or danger is only something that will stop me climbing - if something seems too risky because of exposure or weather or lack of protection or whatever, I might think twice about climbing it even if it's well within my technical ability.

#4.

I don't think I am motivated by risk per se. I accept the risks involved in climbing and I am motivated by the challenge of managing these risks. However, I am willing to accept the risks only because I get so much pleasure out of the activity itself. Similar considerations apply to my other potentially risky sporting activities, namely mountain biking, kayaking and surfing. In contrast, I've tried horse riding (which, in terms of the risk of injury or death, is apparently more dangerous than climbing), but never pursued this activity because I didn't enjoy it. I've noticed that as I've got older I've become more risk averse (i.e. more careful in assessing potential for injury or death and less willing to commit to moves at the limits of my ability). I think this is partly recognition of my responsibilities to house, clothe and feed two children, and partly the fact that broken bones now take longer to heal. Having said all this, there is no denying that the adrenalin surge that comesafter surviving a run out and poorly protected climb, or a highball boulder problem, remains a hugely life-affirming experience.

#5.

Risk - an interesting one. The older I get, the less it interests me. I generally climb because I get a buzz out of leading a trad route and I am definitely motivated by doing moves that are hard by my standard. Breaking into a new grade generally involves less well protected

moves but I generally spend the time weighing up the risks. Risk does not give me a buzz. In fact there are a number of routes where I got really committed above ground fall potential and did not enjoy them. I am unlikely to repeat those routes. I do get enjoyment for doing easier routes with lots of exposure and little protection but that is not driven by enjoyment of risk.That is because I feel really in control and relaxed.

#6.

I am not motivated by the risks per se. I like sports that are variable (versus repetitive motion), are individual sports (vs. team) and require an equal amount of "head" vs. physical involvement. I do like the "x-factor", but, that's not what attracted me to the sport.

#7.

I would not say I am motivated by the risks involved. If anything, thinking about the risks would keep me on the ground. Climbing for me is getting over the mental fear aspect. Being able ot overcome the fear of falling, and turning that energy into useful thought of how to solve the problem, and not think about falling. Once you reach that part of climbing, it is almost zen like.

#8.

Not really a significant factor - yes, there is a buzz when making hard moves, but the attraction is controlling the situation, enjoying the experience, being out in the hills etc. I don't aim to have a climbing accident and consider that the most dangerous bit of a day's climbing is the drive to and from venue.

#9.

The full enjoyment of climbing is some kind of combination of applied skill (in terms of physical and gymnastic effort), environmental appreciation, and mastery of perceived risk. Climbing can be undertaken without any perception of risk. Here the aim is ‘pedestrian’, more like a bit of exercise in the great outdoors. Or, like in sport climbing, a more physical or gymnastic effort. However, this is style of climbing ‘missing something’. Indeed, Risk is so central to climbing, it can readily be described in the classic terms of risk management:

- Reduction (mitigation)
- Transfer (buying insurance)
- Retention (acceptance)
- Avoidance (elimination)

The real crux of the climbing experience is **mitigation**. Here the level of risk (adjectival grade, conditions, etc.) is mitigated by the climber through acquiring technique, and

physical and mental conditioning. Other such risk mitigation occurs such as the use of rope, protection, prior inspection, nutrition, weather appreciation, etc. These are all types of technique; however stand separate from the actual technique directly applied to ascending the climb- e.g. the use of hands, feet, etc against the rock to gain height. Wearing a helmet comes into this somewhere, too.

Risk transfer occurs,where, for example, another more competent, less tired, etc. climber may climb critical sections of the route. Some times you have to suck it up and get on with it anyway (**retention**), though as an initial strategy this is unwise (it may become a strategy when you're on a route and it proves more difficult than originally envisage, the weather changes, it gets dark, etc.)

Risk avoidance occurs, where, for example you decide to do another route than the one originally planned, or retreat from a route that proves too hard. Another form of risk avoidance is sport climbing, which can, in my terms, be described as elimination. I don't participate in sport climbing precisely because it eliminates risk. I generally rate applied skill and environmental aspects of climbing relatively lowly to risk management. Where I'm in a 'low risk' mood (risk avoidance again), where I'm out for a 'more pedestrian' day, I do this through selecting an easier route. However, like any risk elimination strategy, it is likely that you preclude some gain when undertaken. Generally, for a given climb, the higher the risk the less environment appreciation is a factor. The focus on mastering risk significantly how much you can think about the scenery. In fact, you don't really need to take much in the way of risk if that's what you're after. You can always walk around to get the same view. I also think that the thing called 'appropriate style' in climbing can be viewed in risk management terms. Use a ladder- never! Unless of course you're on Everest at 6000m, and other risks predominate.

#10.

With regard to the proposition for comment: To my mind, the most intricate and enjoyable skill in climbing is protection. Risk cannot be eliminated entirely, but it can be controlled. Skillfully placed protection ensures that the results of an error or mischance are unlikely to be catastrophic, this is so important that a significant part of the time spent ascending a pitch is devoted to seeking and emplacing protection, in some cases this might approach 50%. The protection of the second man is also very important: a displaced rock or dropped gear could seriously injure the second so the stance has to be engineered with that in mind. Whilst the above information is important, in part it evades the point of the question. To face it head on: the concept of risk as a positive factor has never been in my mind. I took to climbing because it brought me to places that a walker would never visit, and gave me a close and intimate involvement with the bones of a mountain. The scenery on some of the major crags is astounding, but you have to climb to experience it, and this isn't just applicable to mountains. I well remember climbing a route on Bosigran in Cornwall on a day when there was a heavy swell running, the Atlantic rollers were hitting the edge of the wave platform and spouting higher than my position some 90 metres above the sea with an awesome thud and roar. The wind carried the spray away from me but I felt I was part of the battle between land and sea. Unforgettable! In short, my response to the element of risk

was to do everything I could to eliminate it. I have never courted it and would carefully avoid climbing with people who I suspected DID court it: a death wish is an uncomfortable climbing partener. My feeling is that there is more danger on the motorway in Bank Holiday traffic if you don't seek danger! Popular perceptions rarely emerge spontaneously, they are almost invariably the product of an opinion maker and the perceptions of climbing are heavily coloured by the dramatic urge.Childhood hearing of the story of Whymper and the Matterhorn and films like The Eiger Sanction predispose the man in the street to expect stories of tragedy and disaster, but listen to climbers talking and the impression is of a low key almost routine pursuit. Climbs they have done, climbs they would like to do, how to protect the crux of this route, the unusual combination of moves that get you up that route and surprisingly often aesthetic considerations about the architecture of a route and the purity of a line. Mind you, the scene has changed a lot. Climbers of my age group used to say that they "practised in the pub" (sometimes this was literal truth with the old traditional pubs having traditional routes on their walls!) but now there is a lot of emphasis on training and indoor climbing, climbers are fitter and able to tackle harder climbs safely. They are also more environmentally conscious but they can afford to be now that the old battles for access are a distant memory. I hope these random thoughts are helpful: if you would like me to enlarge on any part of the above or discuss something you consider I have omitted, please contact me further.

#11.

With regard to my thoughts and feelings concerning the importance of risk in relation to my participation in climbing, I titrate the level of risk by imagining, if I fell would I be seriously injured. If the answer is yes, I leave and go and climb something easier. On some occasions you do not think you will fall and the level of risk you can absorb is slightly higher. All activity involves risk. Many climbers say it is more dangerous to drive to a climbing area than to climb. However, you are now very likley to survive even a serious road accident. A serious winter climbing accident perhaps has a lower chance of survival. Edward Whymper said, "Climb if you will, but remember that courage and strength are naught without prudence, and that a momentary negligence may destroy the happiness of a lifetime. Do nothing in haste, look well to each step; and from the beginning think what may be the end."
Risk can be minimised by good training, good equipment and good technique. However, if there was no risk associated with winter climbing, it would not be enjoyable. Essentially climbing is the fun of play, but with the heavy responsibility for life. Part of the challenge is to tame the risk through strength, cunning and tenacity. Winter climbing is also undertaken in a stunningly beautiful environment which can itself lead you into risky situations. Don Whillans said, "the mountaions will always be there. The trick is to make sure you are!"

#12.

Clearly there is risk in climbing, and it certainly adds to the experience. Assessing it's importance in relation to my own climbing is a complex question. Why? Perhaps because it

is just part of the mix, and that mix is ever changing. First thing to say is that I really don't want to kill myself, or even injure myself any more than the odd graze or bruise. Perhaps part of the challenge in climbing is to do things at the limit of my personal ability, and to do them in such a calculated and managed way that risk is minimized. That runs through the whole process, from selection of climbing partner and route through to the time of day, time of year, the weather. Of course my own climbing skill is a factor, and I want to pitch my climbing at a level which challenges me but I can just about do (having a more experienced partner is useful here). A lot of this is intuitive though, based on years of knowledge of the local hills and a trust in my climbing partners.
I had wanted to climb for years, and one of the reasons I haven't is that I had a young family, and it seemed unfair to my wife to expose her and the children to the risk and worry of an activity which I perceived as risky. I started climbing not long after my son (then aged 18) started. I went to belay him at the climbing wall (knowing nothing), getting told I was doing it wrong and deciding to learn to do it right. So I had lessons at the indoor wall and found I could climb reasonably well. I also began to understand climbing systems; the use of ropes and protection, which started to diffuse some of my perception of risk. I soon moved to outdoor climbing and immediately to multi-pitch, largely because of my location. I have been lucky to have found some very experienced partners, which helps a lot in developing confidence and explaining the risk inherent. I am also very comfortable in the Lakeland hills, I've walked them for years and I know the geography, a lot of the paths, how the weather and the light behaves and I can navigate in all conditions. All these things help with the mountain factors and so reduce the risk. However, I know that risk is there all the time. Things can go wrong in an instant; a loose hold, a rock falling from above, a sudden change in weather, a slip or a fall on descent (perhaps more risky than the climbs here when there is no rope in place), the unexpected, or a misjudgement. I rate most of these things as low probability at the grade I can climb, but they are there, and that creates the frisson of excitement which makes it such a worthwhile activity.

#13.

I have always enjoyed sports that are thought of as "risky", before starting climbing my main hobby was hang-gliding. I definitely feel more involved and committed to sports that require me to operate in an uncertain environment. It is important to me that the risks are not purely random; what I enjoy is learning how to make informed choices about the risks I choose to take and (hopefully) enjoying myself within those boundaries. Although I enjoy climbing with a partner it is important to me that both of us play a role in the decision making, accepting responsibility for our own choices. Similarly, I have no interest in 'high risk' sports where (in my opinion) I am asked to delegate responsibility for my own safety to someone else.

#14.

Whilst there are risks in climbing especially in extreme styles (free climbing, mountain and ice climbing, etc) the safety techniques used in trad or sports climbing render it a relatively safe sport. Having participated in white water kayaking for a few years in the past, I would say that trad and sports climbing is safer, whilst obviously not as safe as golf or bowling (which I don't do-too boring) . I think that the slight element of danger sharpens the

concentration on climbing technique and safety practices and I enjoy the total absorption of senses that climbing encourages, in much the same way as freefall skydiving or something similar. Total concentration makes things safer (most accidents in all spheres of life are caused by a lack of concentration). While you are climbing, It's just you, the rock, your gear and your partner, no 'what's for dinner later', no bills to pay, no lateness for appointments, no traffic jams. It's the escape from the mundane day to day stuff by total focus on the current that is the appeal. The perceived danger by those who are not involved is an admission of their innability to focus and their lack of confidence in themselves rather than recklessness on the part of climbers. I am married, have two young children, a mortgage and a responsible job, as do a lot of my climbing friends. None of us wish to spend any time in hospital or leave our partners as widows / widowers or our kids as orphans, we climb because we enjoy life and we train to improve our abilities and then have confidence in them. I would go as far to suggest that climbing is safer than riding a bicycle on public roads because you are less reliant on the general public for your safety when you are climbing with other people who are focussed on enjoying life and enjoying it for some time to come. My 9 year old daughter climbs 'because it's fun!' and I feel no anxiety whatsoever because she is properly instructed and uses proper equipment but I worry when someone follows too closely behind my car when she's in the back!

#15.

I think the risks are a factor but not one that motivates me to participate. I am more driven by the sense of achievement, both in the short term (ie getting to the top in one piece) and the longer term (improving my grade/technique). Risk is important to climbing as it can add to the atmosphere of a climb. returning home following a hard but safe day does not warrant as much "story telling" and sense of satisfaction/relief as a day which was slightly easier but more dangerous/hairy my boyfriend appears to be more driven by the risk and pushes his grade harder than i do. i think he finds the risk alluring and a mark of a good climb. whilst safety concious (helmets, pro etc) he won't lessen the risk in order to make himself feel more comfortable. for example, Dan won't put a bouldering mat under a hard route with gear that is above the crux/won't hold a fall as a back up. To me, putting the mat underneath wouldn't lessen the enjoyment/challenge of the climb but it would improve the consequences of a fall. But, this is the debate about "pure" climbing and all the ethics.

#16.

I'm not sure if its the risks involved in climbing that makes people motivated, But when your climbing you must be motivated or you would never get to the top of a route! Or possibly its the motivation needed to climb that attracts motivated people, I'm not sure if climbing has made me more motivated but I sure know i was motivated before, If there were no risks while climbing people wouldn't be that motivated NOT to fall, because falling is the risk and in taking that risk people must be motivated to get to the top.... so more over you HAVE to be motivated or else how would you get to the top of the route....

#17.

Most of climbing is about limiting the risk. This is why I have a mat, gear on my harness (and in the rock hopefully) or a thick rope for sport (and a clip stick when needed). If a risk is taken it is calculated and probably not that large in reality. Some of the motivation for climbing comes from being scared, being above the gear does this, rather than ground fall potential - which starts getting into the dangerous category. Head games I guess – mental control as well as physical challenge. Bouldering is all about physical challenge to me. Trad is a nice day out, maybe with a little risk, sport is a mixture - mostly gymnastic but with above gear fear. Though I solo upto 6m or so, generally mats & friends about mean it isn't life threatening. Also don't push my grade soloing. If there is someone about who is dangerous, I don't want them around me. Simple. Even soloing severes above 5-6m is going to mean I'll have to clean the mess up. Or if climbing with gear around me/with me, then their actions may hurt me or others and that is not their right, so nuts to 'em. Don't want dangerous people at the crag. Risk is not at the top of list of motivations in climbing. Might mention, I've seen someone hit the ground and bounce. Not something to repeat. Does affect the attitude to risk as I know it is easy to hurt and I am not invincible/infalible. Though before that, I was still a safety conscious climber

#18.

I am in no way motivated by risk. I enjoy climb as a joint mental and physical challenge, it is one of very few sports where you have to solve mental and physical problems/questions at the same time.

#19.

I would say I am risk averse (in comparison to majority of climbers) I dont like being scared and say my primary reason for climbing is that I like the outdoor, I like the places climbing takes place. However we come back to the question, why climbing and not walking or MTB (or even sport climbing) which would get me into very similar environments? And you would have to deduce that the risk element does provide an attraction. So in comparison to climbers... risk averse, in comparison to the population as a whole... probably welcome the element of risk that climbing provides.

#20.

The aspect of risk in climbing to me is fundemental in my climbing. I've reached the age where I don't want to lob off; but if my judgement and strength fail then I will: this will hopefully not be when I'm soloing as I obviously give myself much higher margins. Conversely if climbing in Spain on bolts I'm prepared to push myself further as the consequences/risks are vastly reduced. I guess its all about the ability to judge yourself and yet gain the highest reward. When leading or soling routes you can try and kid who you want; but don't kid yourself!

#21.

I agree with your statement. Risk, or more specifically managing risk and weighing up whether or not a risk is worth taking, is a big part of climbing for me. I enjoy sport

climbing for the pure phsysicality and gymnastic skills, but my most memorable climbs have all been trad or solo. That is where your head is stimulated. Climbing is not just about physical ability but about hte mind games. Can I control my fear? Can I overcome my reluctance to commit? etc. When you are managing risk and pushing things then you start to really appreciate life. It makes you feel more alive (if you'll forgive the cliche). It's not all about risk, but it wouldn't be as much fun if it was totally safe.

#22.

A lot of my pleasure in Alpine climbing comes from going into a risky situation and reducing the risk to almost nothing through a combination of speed, technique and experience. I used to have a reputation amongst some friends for liking dangerous climbs and situations but I have climbed for 35 years and never had an injury so the actual risks (after applying experience etc) can't be that great. In reality climbing is no more risky than driving a car with large chunks of metal (other cars) hurtling towards you at 60 mph. At any moment a small turn to the right by yourself or any of the hundreds of other drivers on the roads can be fatal. Climbing just seems riskier because we have a fear of heights.
I feel that in our overly health and safety conscious world these days some of the vitality of life is being lost because of the elimination of every day risks and this makes sports like climbing more important. I remember as a 5 & 6 year old walking 2 miles to school through deep snow in school shoes and shorts. I find it amazing that nowadays adults with modern clothing and equipment can get into difficulty on short walks in winter in the English and Welsh hills. I don't want to sound like a grumpy old man I am just trying to emphasise that I believe that risk is an important part of life and climbing is a good way of getting a controlled dose. I am also very aware that I am becoming less keen on risk as I age.

#23.

The motivation of climbing doesn't not come from risk, for me, as much as it comes from the challenge. The risk is actually a deterant factor more than anything. When I think of the routes I would most like the climb, I ten to think of harder ones in the 5.8+ range. This is because when you get to this level the rock is typically very clean from large features like ledges and the like. What scares me the most is climbing things in the range of 5.3 because a fall would almost certainly mean a broken ankle from hitting a ledge or other large feature. So I believe this popular conception is actually a complete misunderstanding. Risk is part of the equation of whether or not to climb, and without any risk there would be no challenge. But I believe it is the challenge that we seek, and not the risk. The risk is calculated it terms of reward, if the benefits outweigh the apparent risk, then it is more valuable to climb. This reward could be many things, from getting to a particular part of the rock face in order to do another pitch (this is a very common reason for taking a risk in climbing, probably the most common, I'm thinking of the 3rd pitch of Rum Doodle UIAA V-, Wadi Rum, Jordan), the climbing itself could be rewarding every if very risky (I'm thinking of the route Snake Dike 5.7 in Yosemite), and sometimes the view from the top is what is the reward (this is why my partner and I climbed Machine Gun Groove, 5.6, Gunks to the top), also sometimes people take a risk just so they can tell the story or not tell the

story hat they gave up. Sometimes this story matters most to themselves rather that a retelling for other people.

#24.

I don't feel that risk is a reason that I climb it is more of something that I choose to minimise when I climb either by climbing things that are for me safe or deciding not to climb them. I do climb inside and boulder outside and inside I have done some sport outside. I approach any climb with a similar attitude but it is tempered with what I feel is a safe margin for error when I climb outside if that's TRAD routes or Bouldering. So I suppose you could say that I gauge a route by how much fear I can accept before it affects my climbing as if I get too nervous my performance drops rapidly. So to put it another way the management of risk (FEAR) is part of Traditional climbing not a reason to do it.

#25.

Yes, risk is an issue, too little removes the challenge and thrill, too much I am scared to the point of backing off. Sport climbing and top roping are fine but not the same, like gambling with match sticks not money (not that I gamble!).

#26.

risks_ I do not consider myslef to be a risk taker at all. In fact the opposite. I avoid risks- well my perception of risk which im sure is diff to my pals who do not climb. The importnace of risk in my climbing is actually a reduction of risk rather than an increase. I will look at climb grade, situation, take into acc my own ability, even if others thibnk im capable i will jnot often go out my comfort zone as i am aware of being a mum and my kids.I know i could climb harder as im technicaly abel to dot he moves and do not fall off - fearkeep sme in the lowish grades- and i am constantky considering risks whenever i go out. My climbibg frineds are al very safe climbers and there are no risk takesr in my view there- ie no one will attempst climbs way beyond ability or be reckless in approach to climbs with others. whilst theer is always a risk with any adventuorous activity i think i take all the factors ibto account and risk assess constantly- ie gear, ability, conditioons, etc.If I feel unable to make one move as consequence of a slip would mean an injury i will not do it- im a chicken but heyt!i assess my own ability at every step .
hope this helps.

#27.

I have been climbing for nearly a year. I principally climb trad and, as I am new to climbing, I mostly "second" routes. I train at a wall every week and get out down to Kent and climb on sandstone at weekends if it is dry. This is mostly top-roped which is not my prefered style but it is the best we have near to where I am based (Essex). Everything I do is with the aim to get out to climb trad on longer routes.

Motivation

I have come to climbing, as you can see, relatively late in life. I am young for my age and determined to improve my ability etc. I have never been particularly sporty and it is great to have finally found a physical activity which I love. I am not movitivated in any way by the risks involved. I am a cautious person which I think is part of my personality and not to do with my age. I have always been a little fearful of getting physically hurt and been aware of my mortality and how easy it is to get seriously damaged! Anyone I have climbed with has been an experienced climber with a respect for their own and their partner's safety. In my limited experience, climbers are concerned with safety before risk. I would never entertain climbing with anyone who takes even the smallest risk. Trad climbing, with the correct attitude and ability, in my opinion is not a high risk sport. (It is a greater risk walking to or off climbs, depending where the crags are situated. No-one goes climbing for the walk in or off!!) I recently went to a climbing wall and fell off a bouldering wall from about 3.5m straight on to my back! It was a most unusual thing for me to do. I don't like bouldering because of the risk of falling and, of course, you are not on a rope! I was lucky enough just to have put my back muscles under considerable stress but a few professional massages should put me right. Myself and bouldering have now parted company!! We weren't the best of friends before but now I will leave it alone. When I am on a rope I feel safe and if I feel I could "deck" in the early part of a climb, I don't take a risk on the move.

So, if I don't climb for the risk factor, why do I climb?

I climb because I love the whole experience of being outside in the fresh air away from the crowds (which is why I enjoy walking too). I love the whole problem-solving side to climbing eg, how am I going to get my body to move over this particular problem? I love the learning experience eg, placing gear, staying safe, building anchors, route-finding. I love improving physically eg, learning how to position myself for particular moves so that what was previously difficult becomes relatively effortless. I love the feeling of freedom and the view from the top!

Finally, the people I have met through climbing are some of the finest people I have been lucky enough to get to know. They always want to share their knowledge and to support others' progress. It is not a big competition involving huge egos. People want to share their enjoyment and seem to get as much pleasure from seeing others achieve as they do from their own progession and successes. The kindness and human spirit that I have witnessed among climbers this last year is heart-warming. It restores my faith in human nature and if this companionship and care was evident throughout all groups in society, the world would be a better place indeed. That might sound a bit gushing but I assure you it isn't!

I hope that is helpful to you. If you need any more information, please do not hesitate to contact me. Also, I would love to read/hear from you with your conclusions. It would make good reading I am sure.

#28.

Climbing does involve risk. My climbing is always calculated, but the risks can be high (a large amount of my climbing involves first ascents). It is a sense of adventure and challenge that always drives me. However, I want to live a long life and fearing the objective dangers involved in climbing is a healthy part of this. Friends have died due to a combination of errors in their judgement, chance andcircumstance. You can control some of this by

knowing your limitations and how far you can push these boundaries Pumped, no gear for 30m, poor ice, do I go up or try to come down? Which ground looks best? Can I fight and over come the pump, keep focussed and not move to dislodge my placements whilst I do this? This invovles judgement, self-knowledge, calculation and risk. Getting it right is always essential. You need to know and read the risk. Comment: I struggle with this notion of preferred style. I use the most appropriate means to achieve the climbing: Summer - rock except I've also used ice axes and crampons on the chalk cliffs at Dover and in Sussex and on rotten sandstone in Devon. I've also had to solo large sections of cliff were there is no gear on St John's Head. The chosen style always suits the objective. Climbing is the challenge and the enjoyment. I choose the objective not the style. Good luck with the research. I'd be interested to read the findings.

#29.

When I began climbing in college, the risk factor was definitely a big part of my identity as a climber (and caver). I had an inherent love of the sport, to be sure, but I also liked the idea of being known as a climber. It supplied for me a little extra status and confidence. I guess all guys want to have some sort of edgy aspect to their personality or image.
As for risk itself on the crag, I'm definitely NOT into taking unnecessary risks. I'm a careful leader and follower who builds SRENE anchors and who does not push grades on lead. I do not, however, stitch up every pitch with tons of gear. I will take calculated risks to balance fatigue with extra pro, but that's not because I like the extra risk involved with running it out a little. I would rather not fall off because of fatigue -- again a balance of risks. I do not like climbing with inexperienced seconds who might be a liability in an emergency situation -- or who build terrible anchors. If there is a good way to walk off a crag, I will do that rather than abseil -- and so will limit that risk if possible.
So, I guess for me, risk added to the image of the climber that I promoted but it was not something that I sought as a practicing climber. Today, at my age, none of this image thing really matters. I do not go out of my way to discuss climbing with people or to be known as a climber. And I have definitely become a more careful climber as I have grown older. Good luck with you research.

#30.

For me I wouldn't say risk was a massive factor, I don't like feeling in great danger and do not enjoy routes that have no gear or long run outs. I would much rather do a tricky well protected route than an easy route with no gear. My motivations are getting outside, preferably in remoter places and the technical aspects, i.e. the challenge of trying more creative moves or placing gear. In part escapism, as climbing inevitably requires concentration and therefore you cannot help but forget about work/everyday life when leading a route. Yet I suppose without an element of risk then concentration would be needed so I guess risk does play a part. That is probably why I go climbing rather than walking! So I guess risk is a factor, but one element and managed risk. I think factors such as getting to remote locations and the social side (can't to trad along and like the team aspect) are an equal part in my motivation. Good luck with the study, I'd be interested to read the finished article! This prompted a debate among my climbing mates last night, and

we all seemed to have very different attitudes so it would be really interesting to hear whether there are any clear patterns emerging!

#31.

The risk involved in climbing do provide fun in the sport through adrenaline rushes however that is not my main motivation for climbing. My main motivations for climbing are as follows:

* I gain a sense of acheivement after climbing a hard / high route.

* I am able to test both my mind and body with the sport (which i like) as the act of climbing can be strenous and requires stamina but it also requires good decission making.

My main reason for climbing was detailed in my original response. I don't think a lot about the risk. Good technique and protection devices reduce risk or perhaps they encourage you to push your grade. Usually when I am climbing I feel in control, just occassionally if the moves are difficult and protection is poor then I feel the risk level rise, become worried and very occassionally very scared. Somehow you know it is only short lived. I climb at a fairly modest standard so perhaps you might get a better answer from some one at the cutting edge.

#32.

ANS: Risk is only a motivating factor indirectly. I dont climb because it is risky per se, more because of the successful outcomes of being in a 'risky' situation:
The focus engendered by the risky situation is all absorbing and the return afterwards is very good at putting many aspects of our modern lives (and I mean that in a largely derogatory fashon) back into perspective. Whilst perhaps seeming purposefully to return to the lowest tier of Maslow's 'Hierarchy of Needs' the process of successfully overcoming the physical 'risky' challenge helps me achieve self actualisation - the highest tier, a sort of Maslow feedback loop? ('Above 3000ft there are no worldy cares' - Tom Weir). There is no doubt that were the risks involved in climbing to be altogether removed then the activity would be less absorbing. Its not the adrenaline its the satisfaction at overcoming, managing and solving the 'risky' problem. On a purely physical basis there is great pleasure in performing the movements of climbing efficiently and there is no doubt, the adrenaling rush is a present factor but personally these outcomes are shortlived compared to the psychological aftermath.

#33.

I am not motivated by risk, I like the feeling taht I have achieved something challenging, and sometimes risk comes into that. However after my injury, I couldnt walk for two weeks

and have only been climbing for a month. I found to start with I froze on easy leads, unable to carry on or down climb to a safe point even on a top rope I was scared of falling again, and tried to climb using my arms. I have gradually got back into climbing, starting on a top rope, then leading really easy routes, and learning to trust me feet on tiny holds again! I still choke up when I am leading outdoors sometimes, but I am starting to feel more in control when I am climbing. Now I respect what I am doing on the rock a bit more, and if I feel it is to dangerous or risky I will back off, and not feel like it was a mistake. If you want anymore info just let me know!

#34.

STATEMENT IS TRUE BUT RISK IS NOT THE MOST IMPORTANT FACTOR. SETTING AND
KINAESTHETIC PLEASURE ARE MORE IMPORTANT,

#35.

The management of risk plays a small part in how I derive satisfaction from climbing i.e. performing well whilst in a situation where there are obvious risks (perceived or real). The involvement of a risk aspect is secondary to my enjoyment of moves, views, company and ambience. The existence (or lack) of risk on its own neither motivates me nor puts me off. In an objective conntext all risks should be well managed from an Alpine approach to rockfall on a small outcrop. Successful management leads to peace of mind and better performance.

#36.

I am not motivated by "risk" but I acknowledge that climbing carries risks that I accept. My motivation stems from the challenge to climb as safely as possible, the satisfaction being from placing adequate protection and climbing a route in an enjoyable style - enough challenge, whilst minimising the risks. Safety is a major part of my thought processes and of my climbing partner. My other main motivation is that I know of few other activities that require a certain concentration, such that you can forget all other aspects of your life whilst climbing a route. That is like a mental relaxation from the pressures of everyday living. Lastly, climbing is a great way to enjoy the fantastic British countryside in excellent friendly company, not just of my climbing partner but in the company of other unknown climbers who you may chat to but never see again. Finishing a route is always a fantastic experience.

#37.

It is balanced risk. Testing yourself in terms of ability, technique, experience against the challenges presented. But knowing the risks in detail and using skill to render these minimalist.. But risk is not the sole element in the enjoyment of climbing. It is part of the mix including an appreciation and love of the outdoors, the companionship, the adventure, the solitude etc
And...?